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AMERICAN GAS JOURNAL

Established 1859 Pioneer of the Gas Industry

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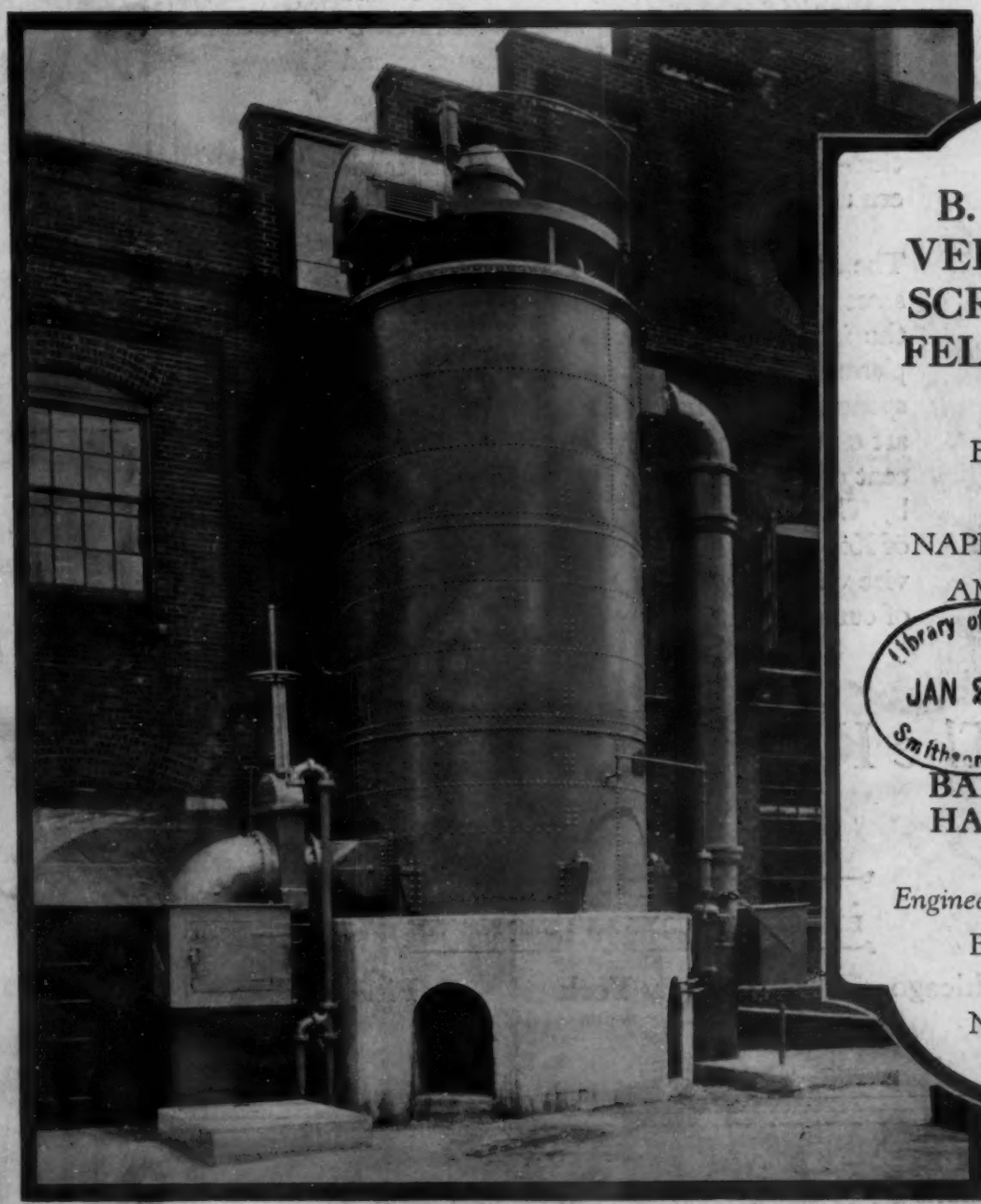

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THE operators of By-Product Coke and Gas Plants built by The Koppers Company have assurance of comprehensive and continuous service by a company closely and permanently identified with by-product practice—a valuable aid in keeping plants modern and fit.

The sustained interest of The Koppers Construction Company in the plants it builds is the interest of a progressive force in those plants. The scope of its operations, its responsibility for major improvements in the art of by-product coking, the fact that 75 per cent of American coke is made in ovens built by The Koppers Company assure operators of Koppers plants that their requests for service will always be met—and with the best of current practice.

The Koppers Construction Company

Designers and Builders of
BY-PRODUCT COKE AND GAS PLANTS

Chicago New York Pittsburgh

Vol. 128. No. 1 Whole Number 3649

American Gas Journal

Sixty-Ninth Year

January, 1928

Published Monthly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.

S. G. KRAKE, Pres. and Treas. H. M. RILEY, Editor
R. S. McBRIDE, Consulting Editor
Washington, D. C. A. M. GLEASON, Sec'y.

VISUALIZING THE MAGNITUDE OF THE GAS INDUSTRY

A perusal of maps, curves, charts and the like is well calculated to bestir and give free rein to one's imagination. He is indeed unfortunate who has not journeyed to strange lands merely through the agency of thumbing through an atlas. In turn, a graphic portrayal of the status of a particular business or industry is generally instrumental in giving one a broader business outlook.

The Gas Industry has grown to such proportions that a description of its magnitude, by way of illustrations, should at least serve to impress its man power with the fact that its scope and aspirations are well nigh staggering.

In the present issue we have endeavored to present tabular and pictorial data showing the size of the gas business, an industry that requires numbers running well into the billions and trillions in order to properly define its status. These pages of data will show, we believe, that the output of gas is increasing in an altogether healthy manner. What is more to the point, they set forth the fact that the industry has as yet scarcely scratched the surface in so far as potential market and possibilities are concerned.

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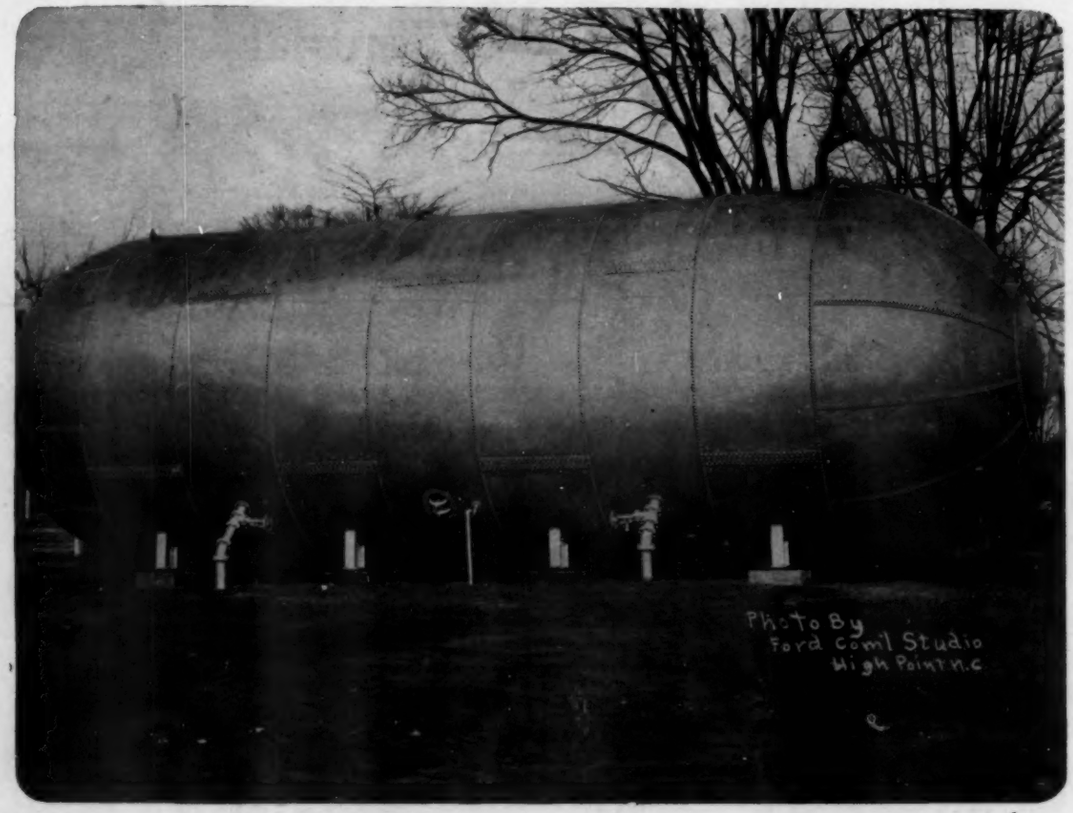

Built for North Carolina Public Service Co., High Point, N. C. Similar Installations Constructed at Winston-Salem, N. C. (2); Orlando, Florida (2); Burlington, N. C.; Greensboro, N. C.; Allegan, Mich.; Plainville, Mich.; Kingston, N. Y.

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50,000 CU. FT. OF GAS STORAGE AVAILABLE BETWEEN 5 LBS. AND 50 LBS. PRESSURE
WE BELIEVE OUR QUOTATIONS WOULD INTEREST YOU

Gas Plant Equipment - Gas Holders - Purifiers

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Here Is the Complete Story of Heat Control on a Semet-Solvay Coke Oven Battery

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Ready access to oven burners enables a workman to maintain perfect flue control.

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The great simplicity, strength and thermal efficiency of the Semet-Solvay Oven is being recognized by gas engineers everywhere.

4—Cleaning the Gas Burner

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ENGINEERING CORPORATION
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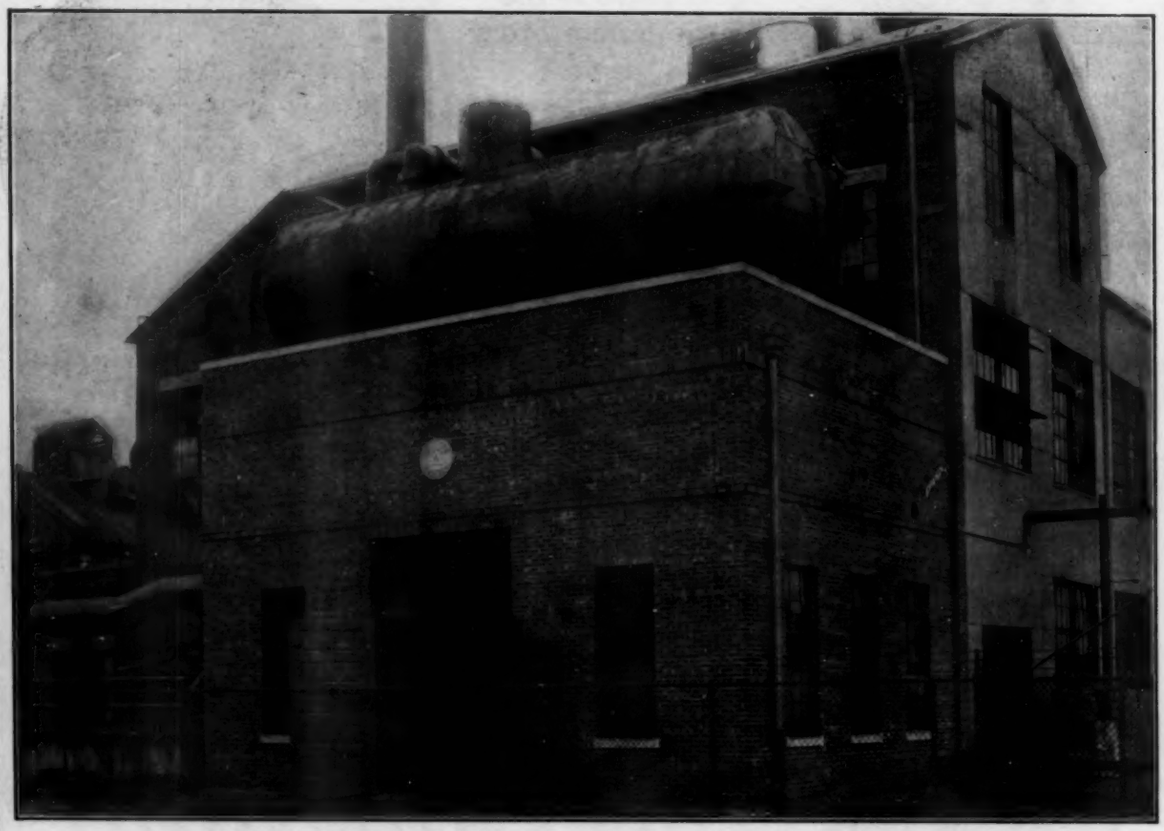
40 RECTOR ST. NEW YORK

SMOOT STEAM ACCUMULATOR



Smoot Steam Accumulator and Control System at the Camden Coke Co., Camden, N. J.
The U. G. I. Contracting Co., Engineers and Constructors

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WE ARE NOW READY TO OFFER

THE U. G. I.
MECHANICAL GENERATOR

SELF-CHARGING AND AUTOMATICALLY OPERATED

After building, operating and thoroughly testing our mechanical generator, of 4,000,000 c. f. daily capacity under varying conditions and fuels for three years in U. G. I. plants and satisfying ourselves that it met the U. G. I. standards of operation, efficiency and dependability, we now offer to the gas industry a REAL AUTOMATICALLY OPERATED MECHANICAL GENERATOR.

THE U. G. I. MECHANICAL GENERATOR

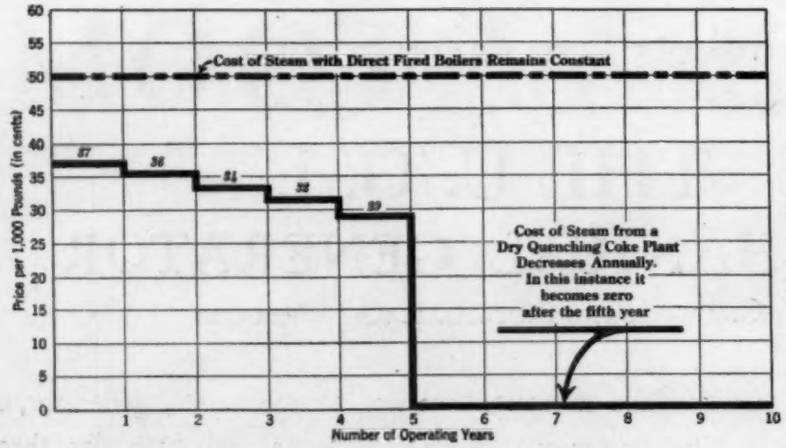
HAS THE FOLLOWING ADVANTAGES:

IT IS MECHANICALLY CORRECT
IT WILL SUCCESSFULLY HANDLE VARIOUS FUELS—
EFFICIENTLY AND ECONOMICALLY
IT ELIMINATES SIDE-WALL CLINKER
IT IS A REAL SELF-CLINKERING GENERATOR, EASILY AND
COMPLETELY DISCHARGING ASHES AND CLINKERS
IT PRODUCES STEAM FOR SET OPERATION WITHOUT
INCREASING GENERATOR FUEL OVER HAND CLINKERED SETS
IT OPERATES WITHOUT MANUAL LABOR FOR
COALING, CLINKERING OR BARRING DOWN
IT OPERATES CONTINUOUSLY
IT ELIMINATES LINING REPAIRS IN THE HOTTER
ZONE OF THE GENERATOR
IT WILL EARN ITS OWN WAY

THE U. G. I. CONTRACTING COMPANY

Broad & Arch Sts., Philadelphia

421 Peoples Gas Bldg., Chicago **1419 Healey Bldg., Atlanta**


Cost of Steam with Direct Fired Boilers Remains Constant
Price per 1,000 Pounds (in cents)
Number of Operating Years
37
36
34
32
29
Cost of Steam from a Dry Quenching Coke Plant Decreases Annually. In this instance it becomes zero after the fifth year

The chart at the left compares the cost of producing steam by direct fired boilers and by heat reclaimed by the Sulzer System of Dry Quenching Coke.

What About the Economies of Dry Quenching ?

THE DRY QUENCHING of coke by the Sulzer System is profitable to both the coke manufacturer and the ultimate consumer. Let us consider the principal advantages to both maker and user—

Coke Manufacturer

The sensible heat of the hot coke is reclaimed and produces from 650 to 900 pounds of steam per ton of coke cooled.

Increased profit due to better quality of coke obtained; a coke absolutely dry and containing very little dust.

Reduction in labor costs due to the substitution of automatic machinery for manual labor.

Reduced costs for maintenance of hoisting and conveying machinery, which is no longer exposed to the destructive influence of steam and acid vapors, as with wet quenching.

Coke User

Better thermal efficiency is obtained due to the use of absolutely dry coke.

Dry Quenched Coke is cooled slowly and is stronger mechanically, thus increasing the capacity of the furnace and minimizing breakdown of the coke in transit and during charging.

Increased furnace output due to decrease in amount of small coke and dust.

Reduced freight and handling charges due to absence of moisture (wet quenched coke containing 8% moisture, is equivalent to one car of water in each twelve cars of coke hauled).

THE Sulzer System for Dry Quenching coke is simple and dependable. The hot coke is charged into a sealed quenching chamber. Inert gases are circulated in a closed cycle by means of a fan, first through the hot coke mass where they absorb the sensible heat of the glowing coke, and thence through a steam boiler where hot gases transfer this heat to the water in the boiler circulatory system and convert it into steam.

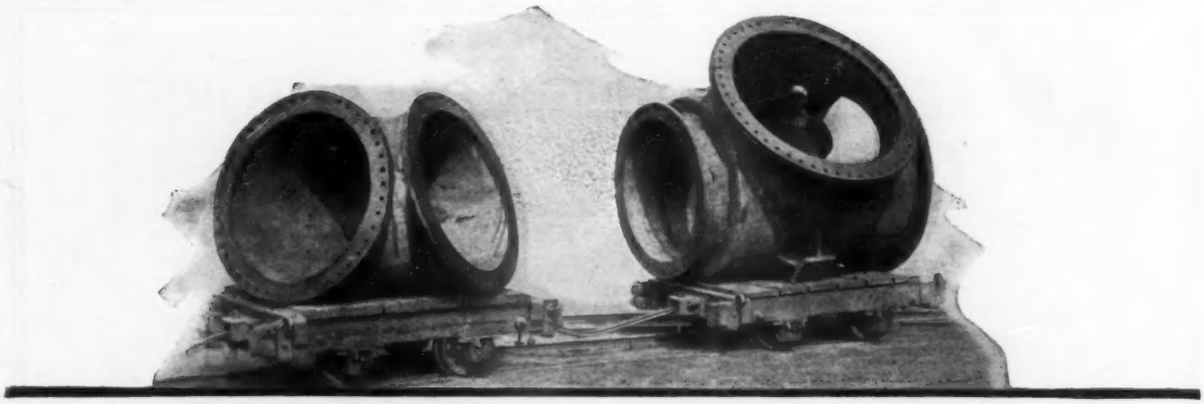
Literature describing the Sulzer System will be sent upon request.

Dry Quenching Equipment Corporation

INTERNATIONAL COMBUSTION BUILDING

200 MADISON AVE. NEW YORK — N.Y.

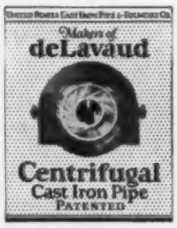
A SUBSIDIARY OF INTERNATIONAL COMBUSTION ENGINEERING CORPORATION



Large standard fittings and special castings

In our various plants we have unusual facilities for handling the largest standard fittings and for making especially heavy castings.

WHILE standard connections should be adopted as far as possible, it sometimes happens that an exception has to be made to meet unusual conditions. When such conditions arise communicate with our nearest sales office. Our equipment is so complete that oftentimes the castings can be designed to fit equipment already available at one of our plants. This saves the cost and lessens delivery time.



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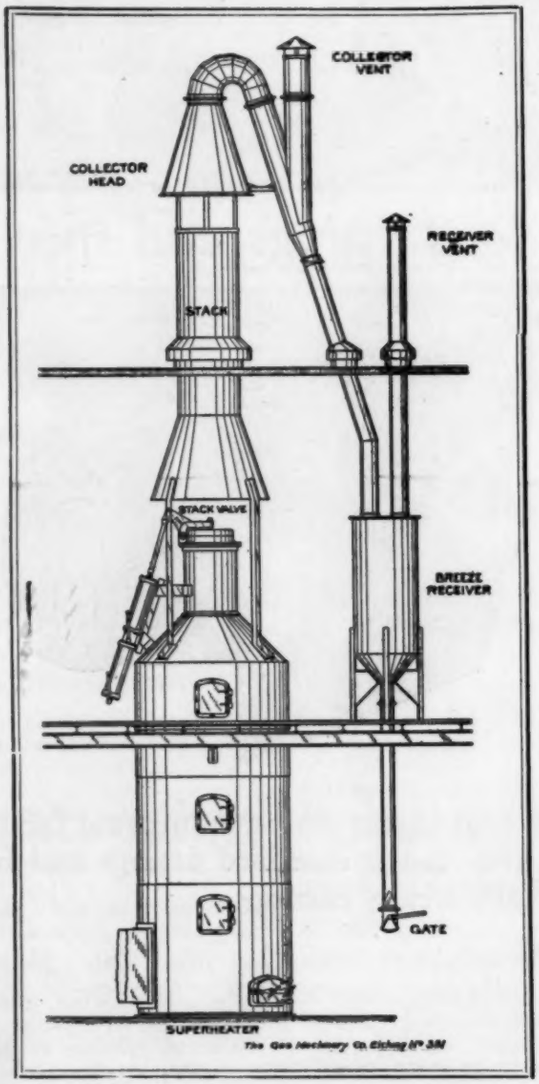
BREEZE and DUST COLLECTORS

For Stacks of Water Gas Apparatus



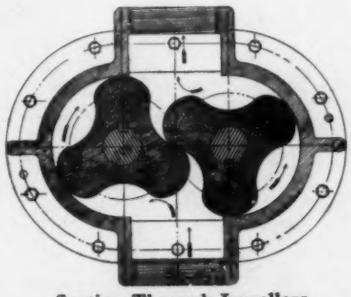
159 SETS INSTALLED

Abatement of Breeze and Dust Nuisance
Elimination of Complaints by Authorities
Cleaner Holder Cups, Yard and Plant

THE GAS MACHINERY COMPANY

CLEVELAND, OHIO

Moving By-Product Liquors in Coke and Gas Plants



Section Through Impellers of Cycloidal Pump.

The positive discharge and the simple sturdy design of Connersville Cycloidal Pumps fit them particularly well to the handling of tar, ammonia liquors, benzol, and other by-product liquors of the gas and coke plants.

Two impellers mounted on large shafts which are supported by ample bearings are the only moving parts. No valves to stick, no ports to clog or springs to break. In other words, a pump just suited to the more viscous liquids.

Send for Bulletin 19E

The Connersville Blower Company

12th St. and Columbia Ave.
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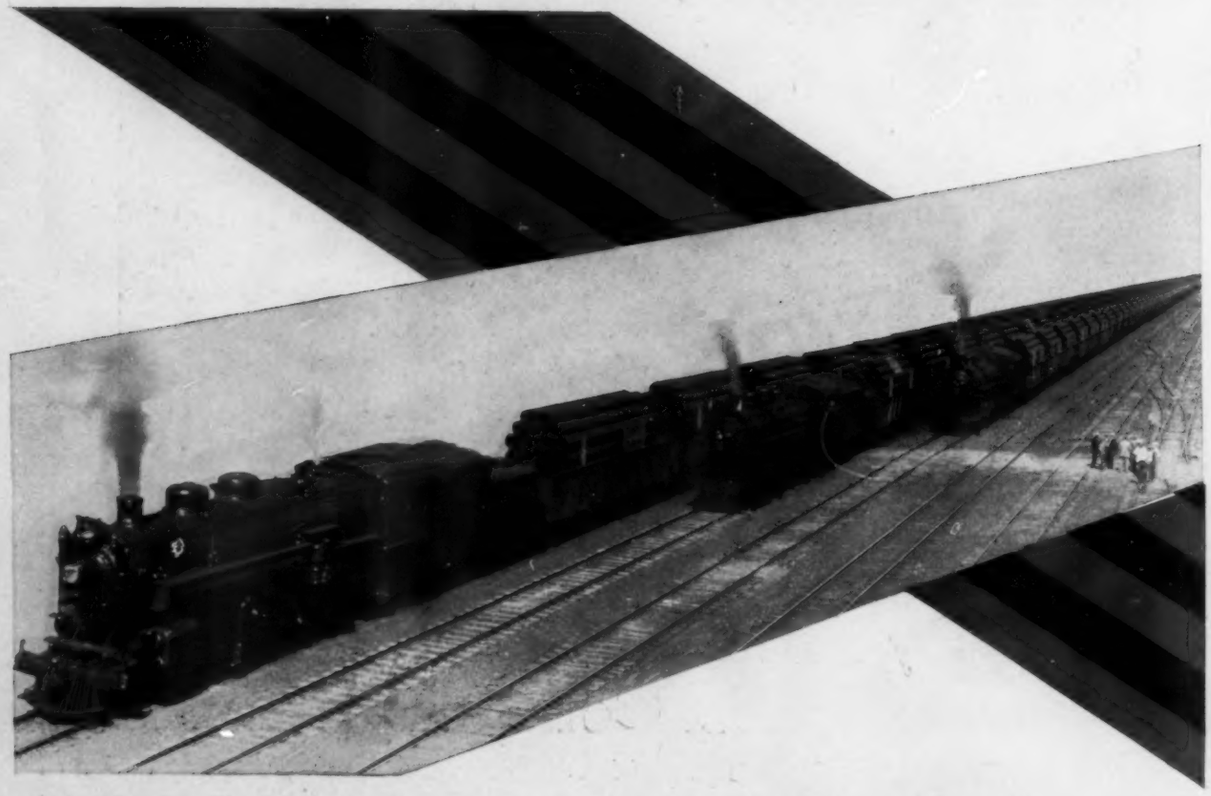
NEW YORK 114 Liberty St. | CHICAGO 623 Monadnock Block | PITTSBURGH 604 Chamber of Commerce

CONNERSVILLE

Blowers • Gas Pumps • Meters • Cycloidal Pumps

No Waiting for Pipe

on the New Dixie Gulf Gas Company Line



6 Solid Trainloads in 1 Shipment

(one-half of this shipment is shown above)

SMITHSTEEL
GAS LINE PIPE

Cut Construction Time 4 Months

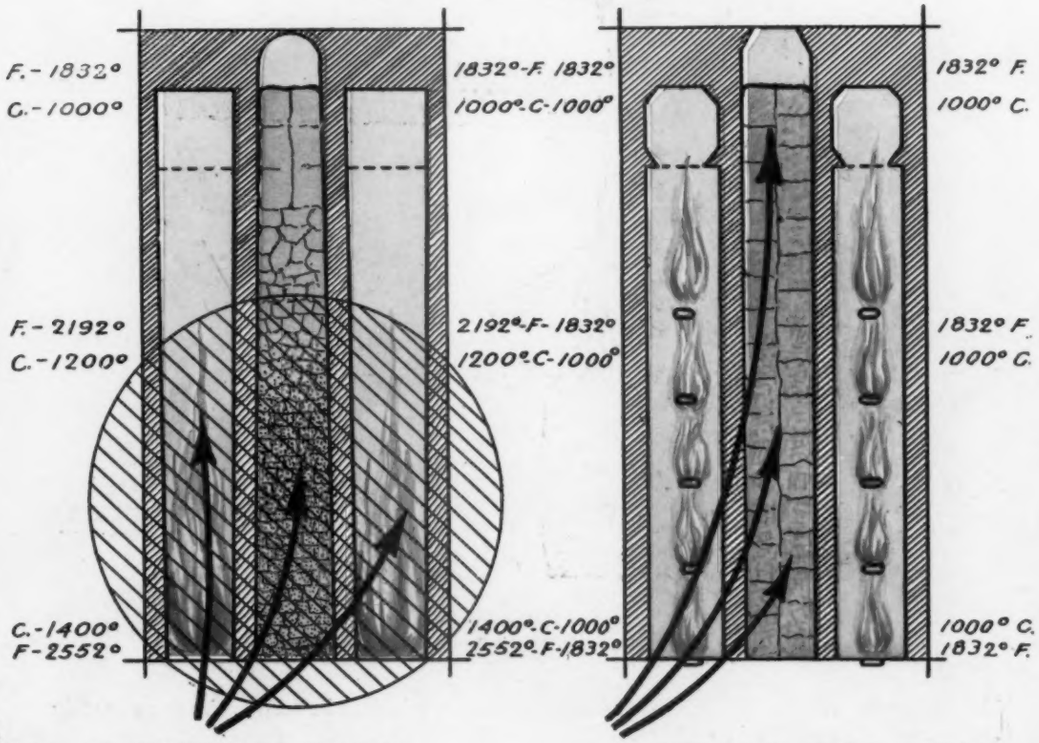
A. O. SMITH CORPORATION

Oil & Gas Field Products Division
General Offices—Milwaukee, Wis.
District Offices at Pittsburgh, Tulsa, Dallas, Los Angeles

THE PROOF!

Showing the Efficiency of the STILL SYSTEM of MULTI-STAGE COMBUSTION

The demonstration plant, as indicated below, has been in operation for the past six months and is 19 feet 8 inches high



THE COMMON ONE-FLAME METHOD

Note how combustion is practically limited to lower 5′ to 6′ 6″, and only occasional tips of flame reach 7′ 6″.

—and then—

THE CARL STILL MULTI-STAGE COMBUSTION SYSTEM

Note how in the Still System the heating gas is stretched over the entire height of the heating flue—19′ 8″.

Furthermore—A 40% throttling of the volume of heating gas did not in the least affect the uniformity of the Still System, while the one-flame process was confined to parts in the immediate vicinity of the sole of the flue.

Other strong points of the Still System are:
Excessive Heating eliminated. Utmost protection of Distillation Gases. Highest yield in By-products, and Free Flowing Tar. Fastest operation of ovens and largest possible thruput. Lowest consumption of fuel gas. Unlimited oven height. Maximum safety and minimum labor requirements in operation. Greatest efficiency.

Let our Consulting Engineers give further details

CARL STILL CORPORATION

114 LIBERTY STREET, NEW YORK

Mueller Gas Tapping Machine "H"

Wherever taps are made —you will find this better tapping machine

IN all parts of the United States and Canada, the Mueller "H" Tapping Machine is sure to be found, giving satisfactory service — more effectively, more quickly, and at less cost.

That is because gas men, everywhere, have come to appreciate the real value of a machine which makes clean taps with the least expenditure of time and labor. This "H" machine makes for rapid, efficient operation—every feature on the machine assures this. Ratchet handle and other devices that permit making taps ⅜ inch to 2 inches in record time are readily appreciated.

You can oil the machine while it is in operation, due to its special oiling mechanism. It is regularly equipped with detachable gas cylinder and rubber saddles, and can be used on either open pipe or pipe under pressure.

Thoroughly tested at the factory to withstand more severe treatment than it will ever be subjected to, you are assured of long, uninterrupted service. Write for the complete MUELLER catalog of gas appliances and machines.

MUELLER CO. (Established 1857) Decatur, Illinois

Branches: New York, Dallas, Los Angeles, San Francisco

Canadian Factory: MUELLER, Limited, Sarnia

MUELLER

Quoting From Kings Treatise

Vol. 1, page 186, FOURTH PARAGRAPH

"Of the various apparatus in a gas works, the retorts are the most important, and, regardless of cost, only those of the best quality should be employed, for any economy obtained at the expense of excellence must be highly detrimental to the interests of a company. The force of this remark will be understood when it is remembered that an ordinary double retort will, during its lifetime, carbonize from 700 to 900 tons of coal. The difference in price between a good and an indifferent retort is so insignificant, when compared with the value of the coal and the probable loss arising from using inferior retorts over a period of two or three years, as to create surprise that price should be any consideration, and that quality alone should not be sought."

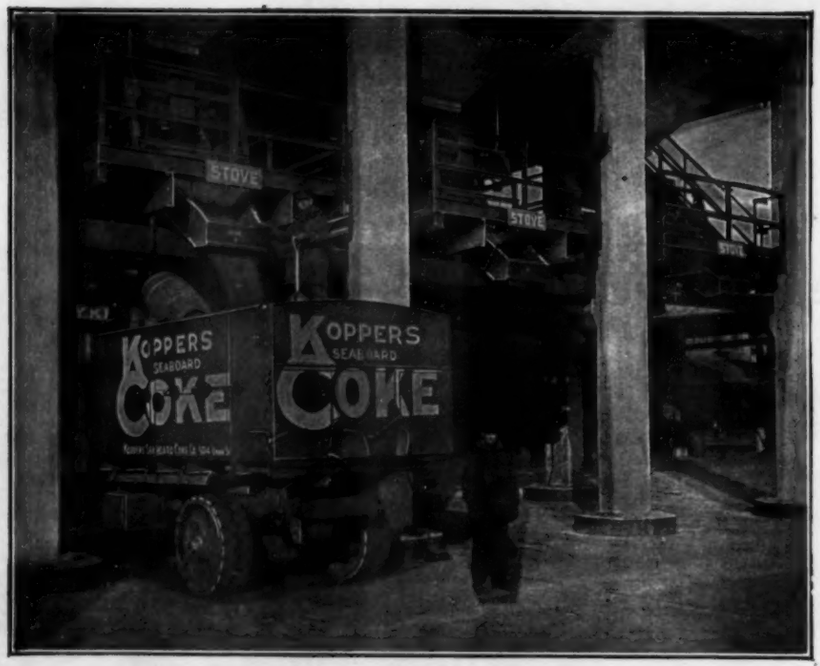
We most surely have advanced in the art of the science of constructing retorts and retort benches. In place of carbonizing from 700 to 900 tons in the double retort, we are today carbonizing from 4,500 to 5,000 tons during its useful life of service.

The same logic should apply now, as when the clay retort was first introduced. That is, ***"To create surprise that price should be any consideration, and that quality alone should not be sought."***

THE IMPROVED EQUIPMENT COMPANY

Engineers and Builders

24 STATE STREET, NEW YORK, N. Y.



This view shows three, of a battery of thirteen Mitchell Electric Vibrating Screens, recently installed in the Union Street Plant of the Koppers Seaboard Coke Co., Brooklyn, N. Y.

WE DESIGN AND BUILD:

Industrial Railways, Automatic Railways, Cable Railways, Cars, Tracks, Switches, Motor Cars, Scales, Conveyors, Skip Hoists, Electric Vibrating Screens, Cut-off Valves, or Gates, Weighing and Measuring Devices, Coal Crackers, "Stevedore" Transmission Rope and Hoisting Rope, and the "Flotograv" (Coke Reclamation System).

Do You Know—

A piece of screen cloth will pass some material through, if it is stationary, and the material slides down over it.

A piece of screen cloth will pass much more material through, if it is moved in a single plane, vertical or horizontal.

*A piece of screen cloth will pass the greatest amount of material through, if it is moved in two planes, alternately or simultaneously.

The MITCHELL ELECTRIC VIBRATING SCREEN

does this, and at the rate of sixty vibrations per second. Hence, its unequalled capacity and efficiency.

A pencil will stand on end on the supporting frame of a Mitchell Electric Vibrating Screen while it is running. Three-quarters of a horsepower runs it.

**This can be proved with a hand screen. The smallest amount of experience will show how much material goes through with two motions instead of one.*

Send for Complete Screen Catalog

The Mitchell Screen carried on I beams—part of building structure

C. W. HUNT COMPANY, Inc.

West New Brighton, Staten Island, New York

PHILLIPS LANG & CO., Inc.
431 S. Dearborn St., Chicago, Ill.

ENGINEERING EQUIPMENT CO., Ltd.
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Condensers
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CRUSE-KEMPER COMPANY

AMBLER, PENNA.

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Proof of Furnace Economy

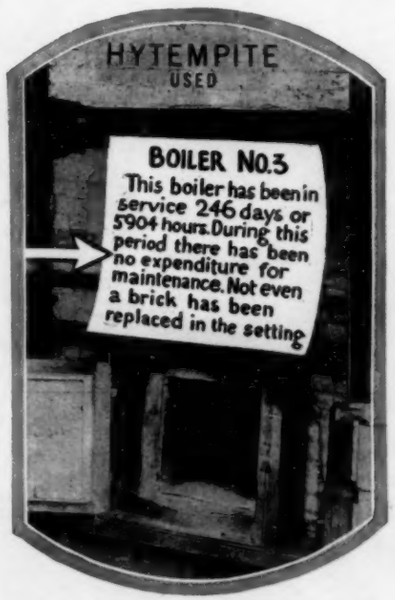
HYTEMPITE

(Reg. U. S. Pat. Off.)

Sets Another Record

On April 18, 1924, six 1680 HP. boilers were put into service at the Devon plant of the Connecticut Light & Power Company. They have been in almost continuous operation ever since, at over 200 per cent rating. All the fire brick used in these furnaces were bonded with HYTEMPITE.

After eight months, when the plant was thrown open for inspection, the management was so proud of the showing made by the furnace walls, they posted signs like the one at the right.


HYTEMPITE
USED
BOILER NO.3
This boiler has been in service 246 days or 5904 hours. During this period there has been no expenditure for maintenance. Not even a brick has been replaced in the setting

This was a record to be proud of. But—On December 13, 1927, Supt. B. M. Doyle said:

> **"Our boilers have not been off the line in nearly FOUR years because of refractory troubles. In that time we have spent practically not one cent for maintenance."**

This remarkable record is just another proof of the Economy of using HYTEMPITE for furnace wall construction.

HYTEMPITE distributors and service are available in every large industrial center.

Quigley Furnace Specialties Company

26 Cortlandt Street **New York City**

If you visit the Chicago Power Show, be sure to see our exhibit in booths 13 and 14

GLOVER-WEST *Vertical Retorts*

A
28 DAY TEST

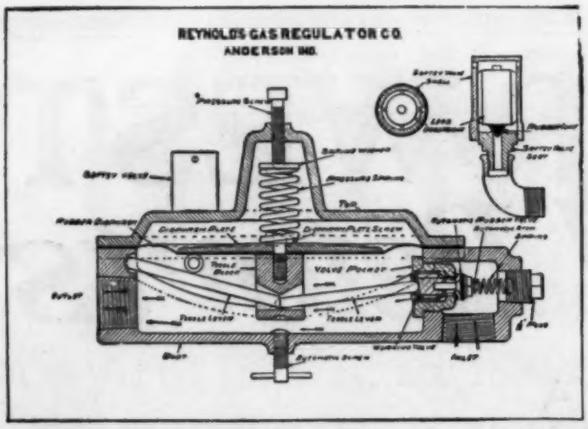
A SUBCOMMITTEE of the Carbonization Section of the American Gas Association completed for the 1927 Convention a series of plant tests inaugurated in 1926. Full particulars can be seen in the Carbonization Committee reports for these two years, and should be studied by all contemplating plant extensions.

The Glover-West plant at Stamford, Conn., was tested in 1927. See:

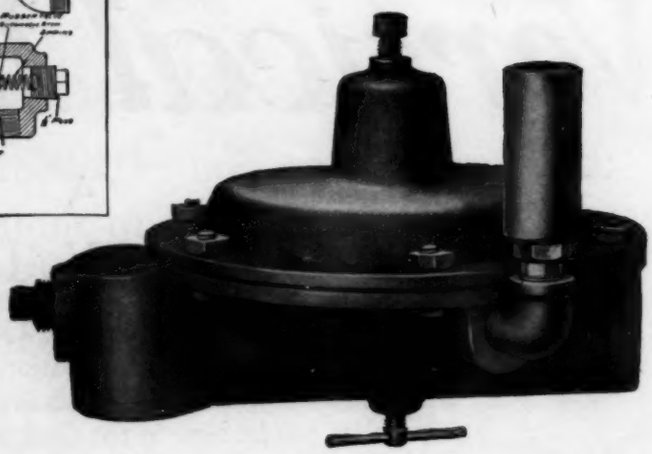
CARBONIZATION COMMITTEE—APPENDIX 1
REPORT OF 1927 SUBCOMMITTEE ON PLANT TESTS
Heat and Material Balance on the Glover-West Continuous Vertical Retorts of the Stamford Gas and Electric Company, Stamford, Conn.

The heating arrangements of Glover-West benches with their control facilities, and the ease with which the speed of coal through the retorts can be adjusted, enables operators to get the maximum yields possible from any coal used, without disturbing labor time schedules or sacrificing efficient fuel results.

WEST GAS IMPROVEMENT CO.
Builders of Coal Gas Plants
441 Lexington Ave. New York.



The above cross section view clearly illustrates the various working parts



Reynolds Products

for all kinds of Pressure Reduction—for either artificial or natural gas.

Governors—
- Intermediate Pressure
- Triple Outlet
- Holder
- Toggle Type Street

Regulators—
- High Pressure Service
- Low Pressure Service
- Intermediate Pressure
- High Pressure Line
- Single and Double District Station

Valve—
- Automatic Quick-Closing Anti-Vacuum

REYNOLDS LITTLE GIANT GAS REGULATOR has proven its superiority in handling high pressures up to 300 lbs., reducing to inches or pounds, for more than thirty years. A study of the design and construction will convince you of its durability. In common with other Reynolds Products a rigid inspection insures that only regulators which are ready for immediate use are ever shipped. LITTLE GIANT Regulators are made in 1″ and 1¼″ sizes. ¶ A specially designed cut-off which acts as a safety valve insures absolute safety. (See cross section view.) This automatic safety valve closes when the gas pressure leaves the high pressure line and remains closed until reopened by hand. Many gas companies are finding that the "Little Giant" will solve their high pressure problems. Our Engineering Department is at your service.

Write!

Reynolds Gas Regulator Company
Anderson, Indiana
Established 1892

Representatives:
EASTERN SERVICE COMPANY, BOSTON, MASS.
F. E. NEWBERRY, AVON, NEW JERSEY
THOS. C. CORIN, DETROIT, MICHIGAN

The above shows an installation of 48" plain end cast iron pipe connected with Dresser couplings. This installation has proven to be superior to all other types. The line has been in operation for some time. It is absolutely tight and has been unaffected by vibration or expansion and contraction. The couplings are equipped with lead tipped gaskets.

S. R. DRESSER MFG. CO.
BRADFORD, PENNA.

DRESSER
Couplings Dominate

The BARTLETT HAYWARD CO.

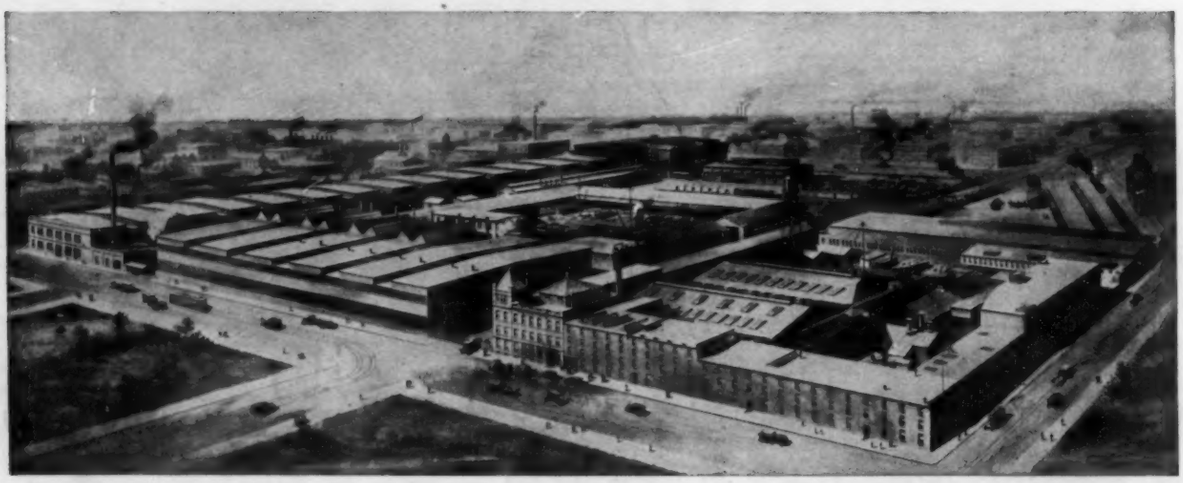
Engineers and Founders

BALTIMORE and NEW YORK

DESIGNERS AND BUILDERS OF:

Carburetted Water Gas Plants
Complete Coal Gas Plants
By-Products Plants
Salt Water and Fresh Water Condensers
De Brouwer Charging and Discharging Machines
Purifiers - Steel Tanks - Shaving Scrubbers
Vertical Waste Heat Boilers
Gas Holders

View of Main Plant, Located at Baltimore



AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry
Including GAS INDUSTRY Est. 1900.

HENRY M. RILEY, *Editor*

A Challenge to the American Gas Man

THREE-FOURTHS of the population of this country depends for comfort or necessities of daily existence on gas supplied by public-utility companies. Much of industry would be largely handicapped or wholly impotent without this source of fuel. Thus there rests upon the shoulders of the American gas man a tremendous responsibility for the public welfare. The magnitude of the gas industry is almost appalling. Each year this industry consumes a half billion dollars' worth of raw material and markets products valued at nearly a billion dollars. A small army of salaried workers and wage earners is continuously employed in the business. There are, therefore, tremendous problems in the procuring and the utilization of manpower, money and materials for the service of the public.

EFFICIENT operation of the industry requires that the process development shall have had the attention of the finest chemical engineering and mechanical engineering talent. Expansion of the industry to its fullest opportunity can be properly obtained only through employment of the ablest merchandizing brains. Supervising the industry in its many ramifications there must be the best of management and executive ability. Every day brings new problems of financing, of public relations, of plant extension, of operation, of utilization, or of engineering. The industry cannot stand still. It must advance in order to maintain its place under the intense competition between rival energy supplies.

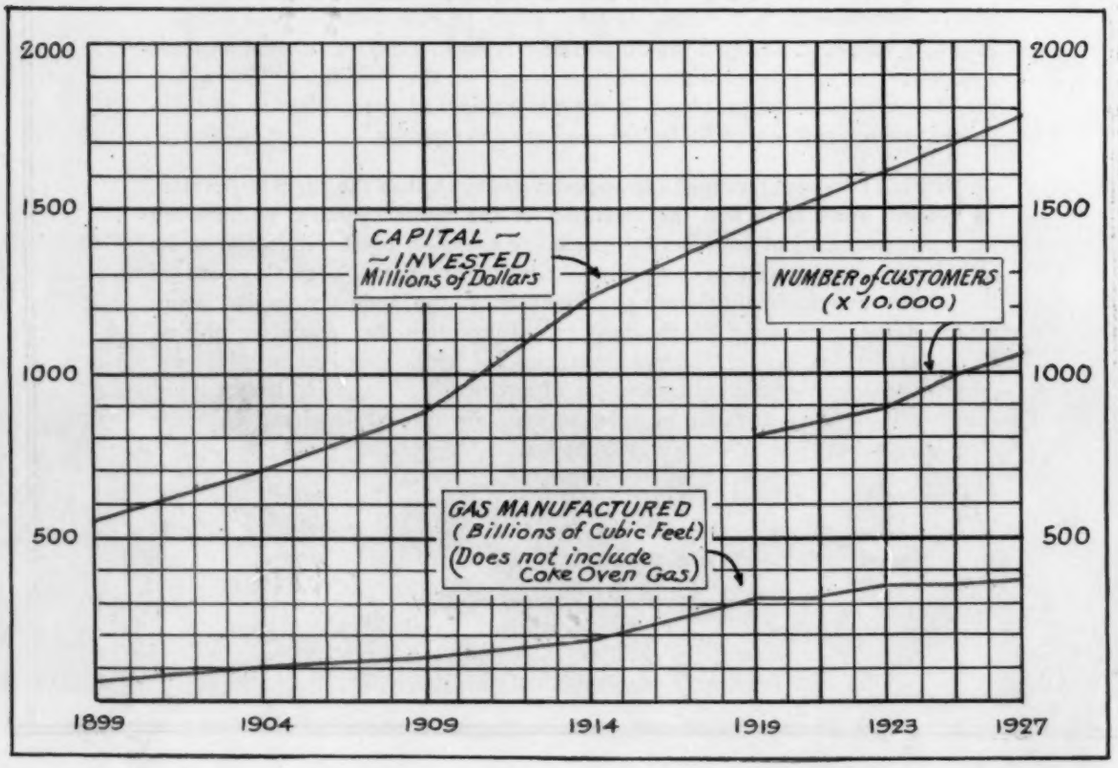
A CHALLENGE presents itself to every person in the industry, demanding bigger and better things for 1928. No other industry affords greater opportunity for profitable constructive public service.

The Gas and Coke Industry in 1927

Number of manufacturing establishments	1,150
Capital invested (not including coke plants)	$1,800,000,000
Persons engaged	95,000
Wages and salaries paid	$135,000,000
Cost of materials used	$500,000,000
Value of products	$900,000,000
Value added by manufacture	$400,000,000
Coke-oven gas manufactured	700 billion cu. ft.
Other gas manufactured	375 billion cu. ft.
Natural gas produced and sold	1,450 billion cu. ft.
Total	2,525 billion cu. ft.
Miles of manufactured gas mains	91,000
Customers served	14,700,000
Population served	70,000,000
Expenditure for new plants, equipment and mains, at least	$250,000,000

How the Manufactured Gas Business Has Grown

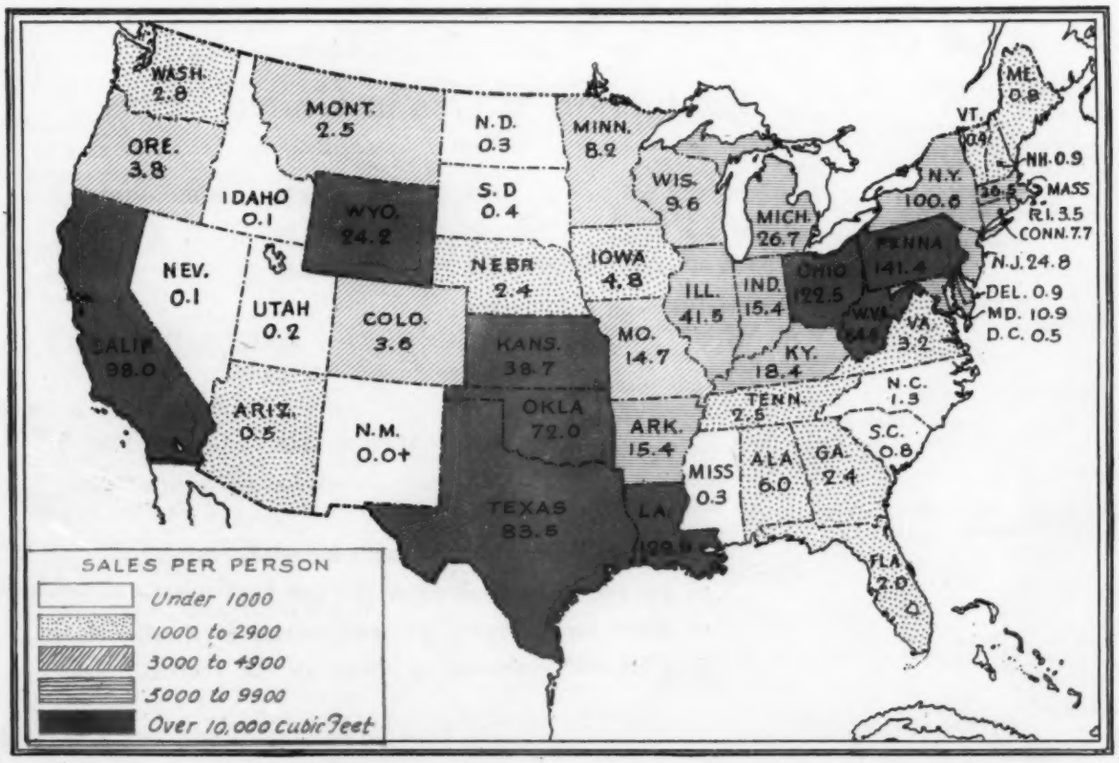
Data from Bureau of the Census with estimates for 1927



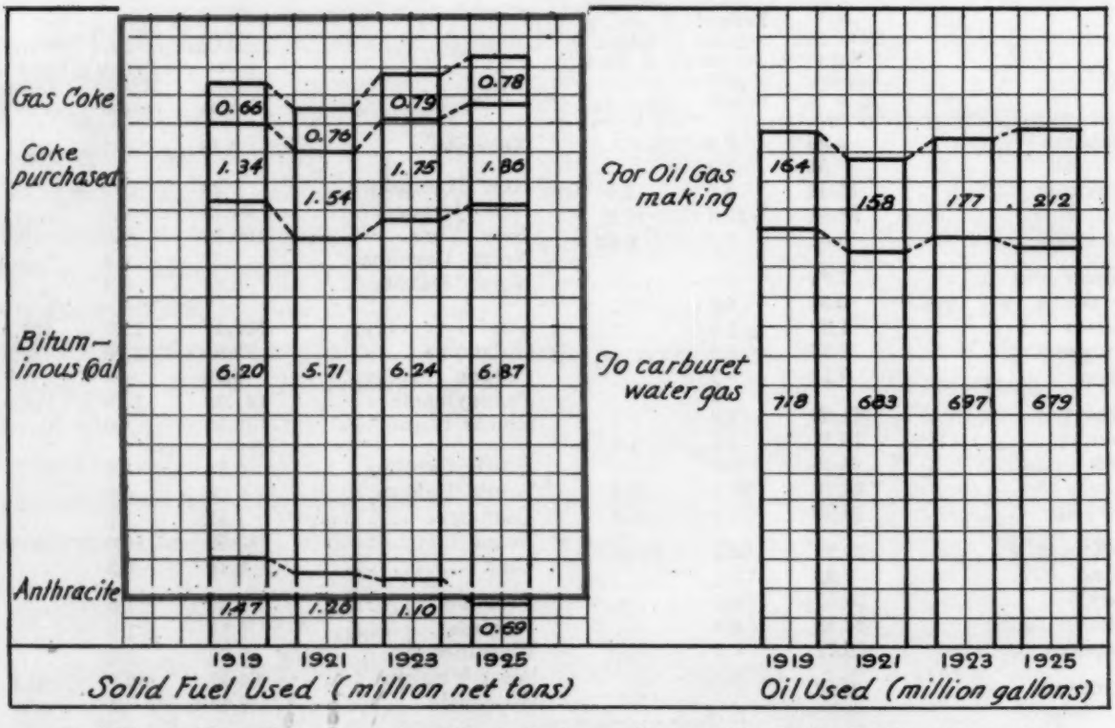
Where 1,150 Billion Cubic Feet of Gas Are Used

Data from Bureau of the Census

	Total Gas Sales Billions of cu. ft.	Ratio of of Sales to Popula'n M per person	Natural Gas Used Billions of cu. ft.
Alabama	5.96	2.4	....
Arizona	.51	1.1	....
Arkansas	15.44	8.6	15.4
California	98.04	23.3	78.2
Colorado	3.61	3.5	0.02
Connecticut	7.71	5.0	....
Delaware	0.89	4.0	....
Florida	1.99	1.5	....
Georgia	2.38	0.8	....
Idaho	0.11	0.2	....
Illinois	41.53	5.8	0.1
Indiana	15.37	5.0	1.4
Iowa	4.76	2.0	....
Kansas	38.73	21.4	38.4
Kentucky	18.38	7.3	17.8
Louisiana	129.92	68.3	129.9
Maine	0.83	1.1	....
Maryland	10.93	6.1	....
Massachusetts	26.48	6.4	....
Michigan	26.74	6.2	....
Minnesota	8.19	3.1	....
Mississippi	0.30	0.16	....
Missouri	14.66	4.3	5.3
Montana	2.53	3.9	2.4
Nebraska	2.38	1.7	....
New Hampshire	0.94	2.0	....
New Jersey	24.75	6.8	....
New York	100.56	9.0	16.1
North Carolina	1.27	0.4	....
North Dakota	0.26	0.4	....
Ohio	122.47	19.0	107.5
Oklahoma	72.01	31.5	72.0
Oregon	3.76	4.3	....
Pennsylvania	141.38	14.9	111.6
Rhode Island	3.52	5.0	....
South Carolina	0.76	0.4	....
South Dakota	0.38	0.5	....
Tennessee	2.47	1.0	....
Texas	83.52	16.0	80.7
Utah	0.16	0.3	....
Vermont	0.36	1.0	....
Virginia	3.17	1.3	....
Washington	2.77	1.8	....
West Virginia	64.47	39.3	61.8
Wisconsin	9.62	3.4	....
Wyoming	24.17	105.5	24.2
Others	10.59	....	...

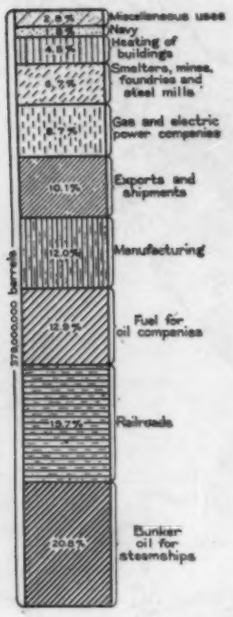


Materials Used for Gas and Coke Making



Coal Charged into Coke Ovens in 1927—in Red—on Comparable Scale, 80,000,000 Net Tons

Gas and Fuel Oil Distribution



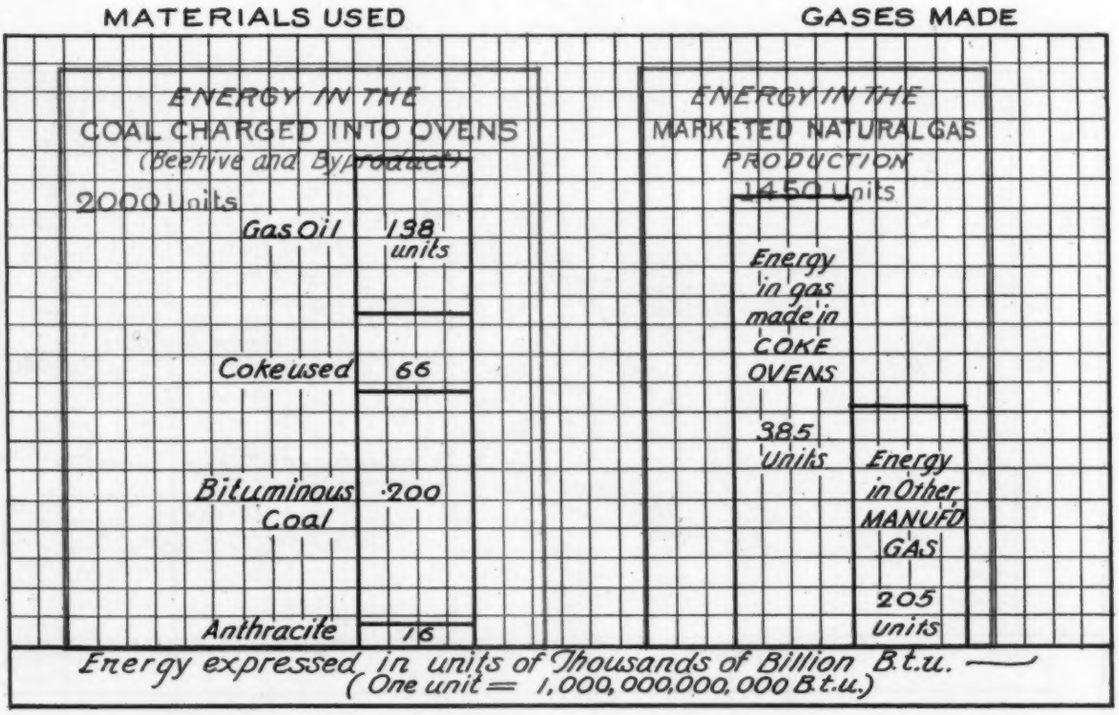
Production of Gas in United States

(Billions of Cubic Feet)

	1923	1924	1925	1926	1927
Retort coal gas.....	57	....	54	....	72
Coke-oven gas.....	601	541	640	707	700
Carburetted water gas	234	....	228	....	268
Oil gas.....	23	....	28	....	35
Natural gas (excluding waste and field use)	1008	1141	1188	1313	1450
Total	1923	....	2138	....	2525

Data from Bureau of the Census for retort coal gas, oil gas and carburetted water gas, and from Bureau of Mines for coke-oven gas and natural gas. All data for 1927 estimated by American Gas Journal.

Relative Energy Content of



Materials Used as Fuel by Gas Works, Not as Gas-making Material

(Data for 1925 from Bureau of the Census)

Anthracite coal	203,000	long tons
Bituminous coal	1,060,000	net tons
Coke—purchased	225,000	net tons
Coke—made in plant	1,204,000	net tons
Oil	55,740,000	gallons
Gas (purchased)	412,000	M. cu. ft

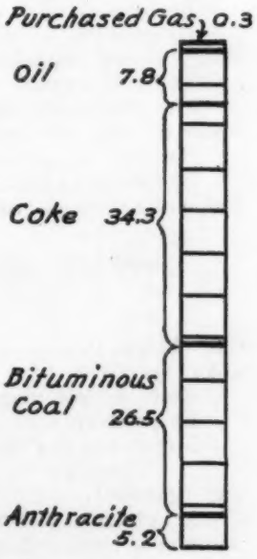
Power Plant and Motor Capacity of Gas Works

(Data for 1925 from Bureau of the Census)

Prime movers—installed capacity		
Steam engines	203,000	h. p.
Steam turbines	78,000	
Internal combustion engines	7,500	
Water wheels and turbines	500	
Total	289,000	
Electric motors—installed capacity		
Driven by purchased current	139,000	h. p.
Driven by current generated	16,500	
Total	155,000	

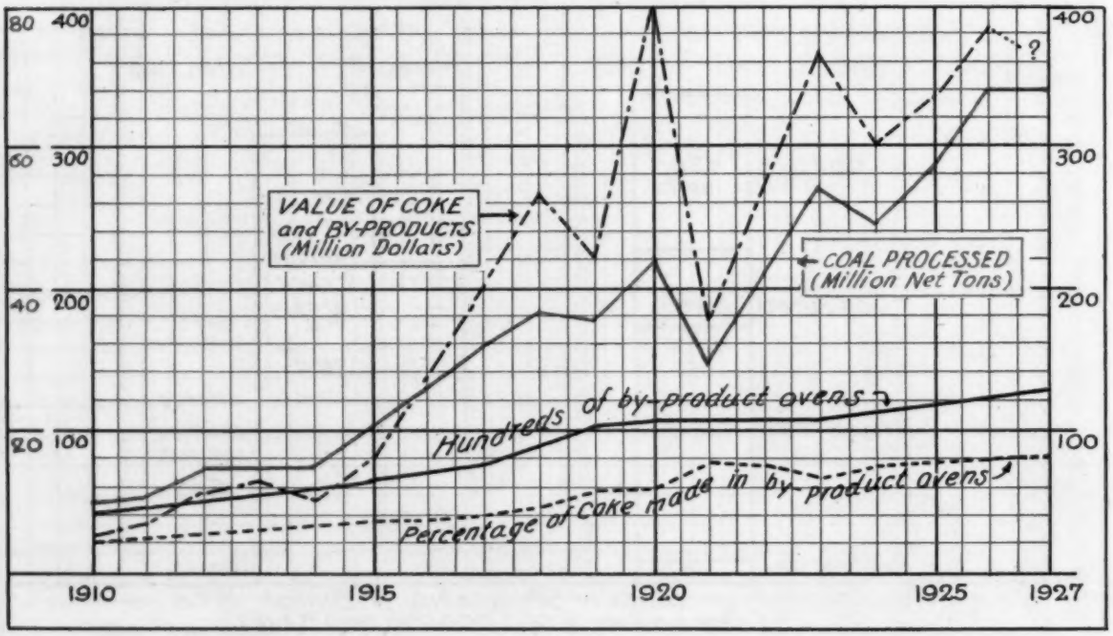
Energy in Fuels Burned in Gas Works

(Total 74.1 units)



Growth of the By-Product Coke Industry and Wide Fluctuation in Product Value

(Data from Bureau of Mines)



Magnitude of Coke Oven Industry

	1926	1927
Ovens in existence on December 31		
Beehive	52,558	50,000
By-product	11,716	12,700
Number of by-product plants on December 31	78	80
Coal processed (net tons)		
Beehive	19,200,000	10,700,000
By-product	63,600,000	62,800,000
Rated annual capacity of by-product ovens		
For coal treated (net tons)	72,000,000	81,000,000
For coke made (net tons)	50,500,000	56,000,000
Value of coke (dollars)		
Beehive	$57,000,000	$27,000,000
By-product	$250,700,000	$240,000,000
Value of breeze, gas and by-products sold (dollars)	$138,000,000	$135,000,000

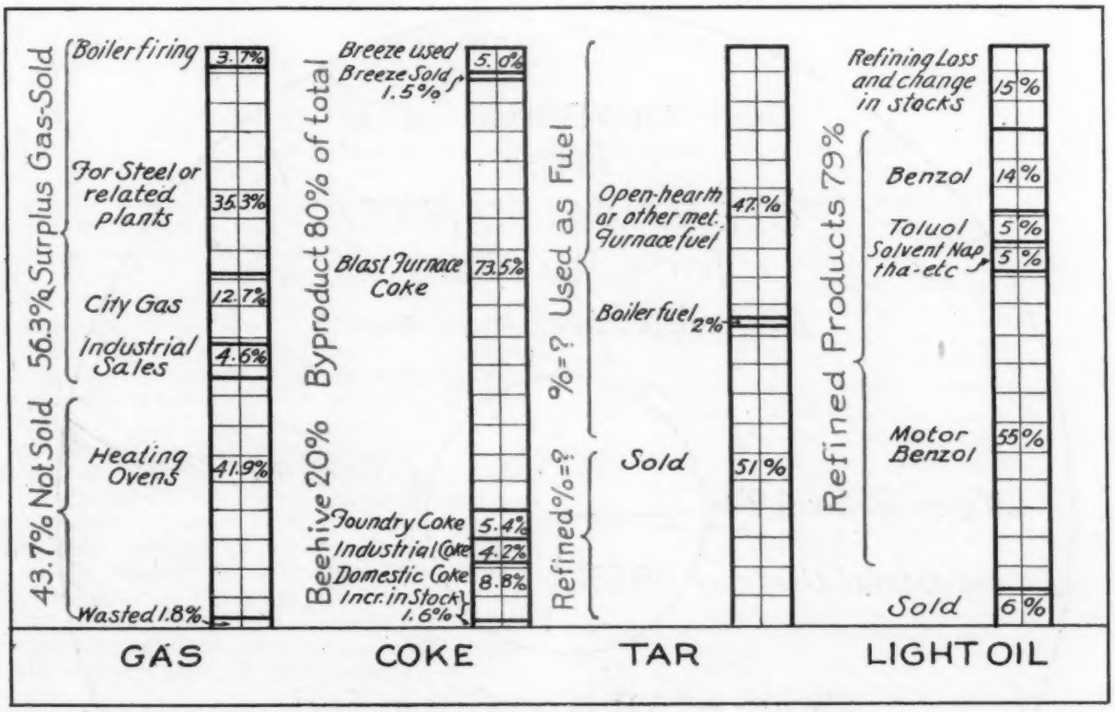
Production of Coke and By-Products at Coke Ovens

	1926	1927
Gas (M cu. ft.)	707,000,000	700,000,000
Coke		
Beehive (net tons)	12,500,000	7,000,000
By-product (net tons)	44,400,000	43,800,000
Screenings and breeze (net tons)	4,400,000	4,000,000
Total (net tons)	61,300,000	54,800,000
Tar (gallons)	530,000,000	525,000,000
Crude light oil (gallons)	164,000,000	162,000,000
Ammonia, total sulphate equivalent (net tons)	690,000	680,000
Naphthalene (pounds)	7,900,000	7,800,000

Data for 1926 from Bureau of Mines; data for 1927 estimated.

Disposition of Coke Oven Products

(*Data for 1926 from Bureau of Mines*)



Coke and By-Product Yields and Sales Values Realized by By-Product Coke Plants in 1926

(*Data from Bureau of Mines*)

	Yield per ton of coal	Value per unit sold	Value per ton of coke made
Coke (pounds)	1394	$6.95 per ton	$5.65
Breeze (pounds)	131	$3.50 per ton	0.21
Tar, total (gallons)	8.3	5.1 cents	0.61
Ammonium sulphate or equivalent (pounds)	21.7	2.1 cents	0.63
Light oil (gallons)	2.8	12.3 cents	0.62
Light oil derivatives (gallons)	...	20.8 cents	...
Gas, total (M cu. ft.)	11.1	.....	...
Surplus	6.3	16.3 cents*	1.46
Total	...	.....	$9.18

* The sales price for gas varied widely according to the purpose for which it was sold, as follows: Used under boilers, 5.5 cents per M; used in steel and related plants, 11.2 cents per M; used for industrial purposes, 16.3 cents per M, and sold for distribution through city mains 33.6 cents per M.

In 1927 There Were Manufactured

1,500,000 Gas Cook Stoves, 800,000 Gas Space Heaters, 1,100,000 Gas Water Heaters

And yet—

In cities over 100,000 in population

Gas Market Is Not Saturated

In cities of 5,000—10,000 in population

The greatest opportunity for gas is still ahead

An Analysis of 1927 Corporate Tax Problems

An outline of all corporate taxes; what they are; how to prepare them, and how to keep records of taxes when they fall due

By J. J. Berliner, B. C. S.
Senior Member of The National Accounting Systems

THE tax problems of corporations vary according to the form of organization and the nature of the business. If the company qualifies as a foreign corporation in numerous States or controls affiliated corporations chartered under various State laws, a thorough acquaintance with the provisions of the State corporation tax laws imposing licenses and franchise taxes is essential. In case the company owns property in various States, the company official responsible for taxes must be familiar with the State and local property tax laws and procedure. Experience has shown that the local property taxes can be best handled by the branch executives or local men on the ground, but at the same time they need the guidance of a qualified adviser who is always up to date on tax matters and who has a knowledge of tax law in general. Especially must a constant and insistent watch be kept over property taxes of the various States, as these represent some of the most common and perplexing forms of taxation.

When a company transacts business from another State, the question whether the company is transacting business within the State so as to be liable to state impositions and penalties for non-qualification becomes a very important and serious one, in respect to which the corporation should be very sure of its position.

Tax Problems Are Technical

Federal tax problems present many very technical aspects, and a thorough familiarity with the laws, regulations and decisions is essential for the executive responsible for the filing of returns and making of payments.

Corporations are subject to taxation upon their real and personal property. Such taxes are called property taxes. Also because they are corporations they are subject to numerous other taxes called corporate taxes. In addition to property and corporate taxes there are taxes imposed upon corporate stocks and bonds in the hands of their holders. When taxes are levied against the securities of a corporation in the hands of their holders, as well as against the corporation itself, double taxation results. Double taxation is legal unless prohibited by the constitution of the State. Some State constitutions forbid it; others do not. The rule varies in different jurisdictions. It is not forbidden by the Constitution of the United States.

Federal Taxation

The Federal government imposes an income tax upon corporations of 13½* per cent of their net income; it levies a stamp tax upon the original issue of stock and securities and on the transfer of stock; and it also imposes an estate tax, and an excess tax upon particular businesses or articles of commerce. The excess profits tax and the capital stock tax have been repealed. Although the excess profits tax which, like the income tax, was a tax on income, is no longer imposed, many questions as to the corporation taxes for the excess profits tax years, 1918, 1919, 1920 and 1921 are still before the Bureau of Internal Revenue and the United States Board of Tax Appeals.

A State may not tax interstate commerce, although it may tax the property or instrumentalities situated within its borders and used in such commerce.

The United States Revenue Act of 1926 imposes a tax upon the annual net income of corporations at the rate of 12 per cent for the year 1925 and 13½ per cent for each year thereafter. The following credits are allowed: (a) the amount which is received as interest upon the obligations of the United States and included in gross income; and (b) a credit of $2,000 if the net income of a domestic corporation is $25,000 or less. If the net income is more than $25,000, the tax shall not exceed the tax which would be payable if the $2,000 credit were allowed, plus the amount of the net income in excess of $25,000.

The return must be made and filed with the Collector of Internal Revenue of the district in which the principal office of the corporation is located on or before the fifteenth day of March or within two and a half months after the close of the fiscal year. The return must be sworn to by the president, vice-president or other principal officer, and also by the treasurer or assistant treasurer. It must state specifically the items of gross income, deductions and credits allowed by the act. Regardless of the amount of its net income, every corporation, not expressly exempt from tax, must make a return. For 1926 affiliated corporations may make a consolidated return of net income. Or each member corporation may make a separate return. But thereafter the

* A bill is now pending in Congress to reduce this figure to 11½ per cent.

basis upon which the returns are made cannot be changed without the permission of the Commissioner of Internal Revenue.

Procedure In Affiliated Corporations

Two or more domestic corporations are deemed to be affiliated: (1) if one corporation owns at least 95 per cent of the stock of the other or others, or (2) if at least 95 per cent of the stock of two or more corporations is owned by the same interests. The consolidated return is filed by the parent or principal corporation on form 1120, and each of the affiliated corporations files form 1122 with the schedules indicated thereon. Foreign corporations, domestic corporations deriving most of their income from the possessions of the United States, and corporations organized under the China Trade Act may not file a consolidated return.

Officers signing and swearing to a corporate return are responsible for all statements that are contained in it. In a case where the income of a corporation was falsely and fraudulently understated (appeal of Bell Lumber Co., 2 B. T. A. 564) and in which it appeared that the officers were aware that the tax aspects of a transaction would require consideration, but in which the transaction was, neverthless, shown on the books, so that no doubt was left as to the intention to conceal it and no reference was made to it upon the return, the Board of Tax Appeals said as to the officer who signed the return. "He cannot be heard to say, as he testified at the hearing, that these matters were left to his bookkeeper or some one else. The signature and oath upon the return is not an empty form. Its purpose is to fix responsibility, and a sworn oath is just as reprehensible as a complete personal misstatement."

Items Included In Gross Income

The gross income of the corporation includes all gain, profits and income derived from the transaction of its business (Revenue Act, 1926, sec. 233) except such items as are exempt from taxation. In computing the net income there may be deducted (Revenue Act, 1926, Section 234): (1) the ordinary and necessary expenses of the business; (2) interest paid or accrued on its indebtedness, except indebtedness incurred to purchase tax-exempt securities; (3) certain taxes; (4) losses sustained and not compensated for by insurance or otherwise; (5) debts ascertained to be worthless and charged off, or, in the discretion of the Commissioner of Internal Revenue, a reasonable addition to a reserve for bad debts; (6) amount received as dividends from a domestic corporation other than a corporation deriving most of its income from possessions of the United States, from a corporation organized under the China Trade Act, or from foreign corporations under certain circumstances; (7) a reasonable allowance for exhaustion, and wear and tear of property used in the trade or business, including a reasonable allowance for obsolescence. (8) in the case of mines, oil and gas wells, other natural deposits, and timber, a reasonable allowance for depletion and depreciation of improvements, according to the peculiar conditions in each case.

Proceeds received from sale of stock, contributions from stock holders, and money used to purchase a corporation's outstanding stock for its treasury are capital transactions. Money or property reserved out of earnings and deposited in a sinking fund or delivered to a trustee for the purpose of paying off bonded or other indebtedness are taxable. When property is acquired and later sold at a higher price, the gain is taxable income. The excess of issuance price of bonds over price paid to acquire and retire them is taxable, while excess paid over issuance price may be deducted. The same deductions that a natural person may avail himself of are usually available to a corporation.

Items Not Deductible

Some items not deductible by a corporation are: (1) contributions or gifts; (2) donations except to hospitals, educational institutions, and so forth, maintained in connection with its own business and to separate pension funds for employees; (3) expenses incurred in and about the purchase of its own stock; (4) fines imposed for violation of the blue sky law; (5) money paid to a third party to cease operations detrimental to the corporation; (6) advances to a subsidiary corporation; (7) reserve fund out of which to retire its preferred stock; (8) contributions, in addition to dues, to commercial organizations; (9) commissioners paid for sale of corporate stock; (10) money paid out for new buildings, permanent improvements and betterments; (11) money spent in making good on exhaustion for which an allowance has been or is made; (12) premium paid on policies of life insurance on officers or employees with the corporation as beneficiary; (13) organization expenses of the corporation, including attorney's and accountant's fees.

Refunds and Credits

The Federal income tax law affords remedies for taxes erroneously or illegally paid. The Commissioner of Internal Revenue may credit amounts of tax which have been overpaid against taxes due. There is no longer provision for filing claims for abatement or for credit by taxpayers; that is, the taxpayer cannot offset taxes which he owes for one year by filing a claim for abatement or credit showing overpayment of taxes for other years. Adjustment may be made by the commissioner upon audit of the returns, but he cannot be compelled to do so by the taxpayer. The claim for a refund, for which Treasury Department form 843 is used, is the only claim which may be filed by the taxpayer. The claim must set forth all the facts relied upon to support it.

An amended return is not a claim for a refund. It must be accompanied and supported by the claim. Where a refund is claimed to cover taxes paid on the original return, the claim must be accompanied by an amended return showing the basis upon which lower taxation is claimed. Claims for refund to recover additional assessments may be filed if no appeal has been taken to the Board of Tax Appeals. The Board of Tax Appeals is without jurisdiction to order refunds, but under some circumstances it may direct a refund in connection with an appeal before it.

The following table shows the limitation of time for filing refund claims under section 284, Revenue Act of 1926.

Return for	Period of Limitation From Time Tax Paid	Additional Time for Filing Claim Where Waiver Filed		
		Waiver Filed on or before	Limitation Extended to	If Waiver Extended Limitation Extended to
1917	4 years	April 2, 1923	April 1, 1925	April 1, 1926
1918	" "	June 15, 1924	April 1, 1925	April 1, 1926
1919	" "	June 15, 1925	April 1, 1926	April 1, 1927
1920	" "	June 15, 1926	April 1, 1927	April 1, 1928
1921	" "	June 15, 1926	April 1, 1927	April 1, 1928
1922	" "			
1923	" "			
1924	" "			
1925	3 "			

No Provisions For Waivers

The claim for refund should be made on Treasury Department form 843.

Limitations—The table of limitations on assessment and collection of additional tax under sections 277 and 278 is presented below.

Taxable Year	Assessments Period of Limitation From Time Return Filed	Collection	
		Proceedings in Court Without Assessment Period of Limitation from Time Return Filed	Proceeding in Court or Distraint After Assessment Within Statutory Period of Limitation from Time Assessment Made
1917 1918 1919 1920	5 years	5 years	6 years
1921 1922 1923 1924	4 years	4 years	6 years
1925 and subsequent years	3 years	3 years	6 years

Board of Tax Appeals

The United States Board of Tax Appeals created by section 900 of the Revenue Act of 1924 is continued by section 1000 of the act of 1926. The Board consists of sixteen members appointed by the President by and with the advice of the Senate. The purpose of its establishment is to provide an agency, independent of the Bureau of Internal Revenue, to which a taxpayer may appeal before paying an additional assessment. It may consider appeals from proposed additional assessments of income, excess profits and estate and gifts taxes. There are still some unsettled questions involving the excess profits tax and the gift tax, although both of these taxes have been repealed. It has no jurisdiction as to due taxes (Appeal of Aldine Club, I. B. T. A. 710), an appeal must be taken and a filing fee of ten dollars paid within sixty days (not counting Sunday as the sixtieth day) after the deficiency letter is mailed by the Commissioner of Internal Revenue.

Practice and forms are prescribed by the Rules of Practice issued by the Board.

State Corporation Taxation

Every State imposes taxation of some kind upon corporations as corporations. These taxes are called corporate taxes. The first classification of State corporate taxation is that of initial taxation and annaul taxation.

Initial taxation is that paid by a domestic corporation when it is incorporated to the State granting its charter. Usually, there is to be paid in addition to the initial taxes, whether of a domestic or of a foreign corporation, filing fees to the State officers with whom the documents of incorporation or of authorization are filed. When capital stock is increased the increase usually is taxed.

Entrance taxes or fees are the taxes imposed upon a foreign corporation by a State upon authorizing such a corporation to do intrastate business within its borders. The statutes often provide for additional taxation if the amount of business or capital of the corporation within the State is increased.

Annual State corporation taxes may be thus classified: (1) taxes upon corporate income as imposed by some States; (2) capital stock taxes which may be divided according to (a) the nominal value of authorized or issued capital stock, (b) the actual value of the capital stock and (c) the actual value of capital stock, less all or a part of the tangible property upon which the company pays local property taxes. This tax is known as a corporate excess tax. The corporate excess tax then is a tax upon the value of the shares of stock, including in some States, but not all, the bonded or funded indebtedness, less the value of property otherwise assessed.

In either case the object is to tax the "going value" of the corporation.

Preparation and Recording of Tax Returns

There are so many complications arising from taxes of all kinds that these matters should be handled by a qualified specialist and it is found much better where a company maintains several branches to have all of the tax work handled from a central point by experts. It entails constant study to keep in touch with the various tax laws and tax decisions relating to the returns demanded by the Federal government, States, counties and cities.

As large penalties, forfeitures, or other losses may result from oversight and defaults, the importance of carefully establishing and conducting an absolutely dependable system cannot be overemphasized.

JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
1											

Tickler System Form

The Tickler System, devised for automatically bringing up for attention all steps to be taken with respect to reports, assessments, tax payments, etc., must be comprehensive and errorproof.

One unit of the system is composed of indices by month (see form); another unit represents current matters to be attended to and is indexed by days. Attention dates are arranged with reference to the steps to be taken by the company in respect to all taxes.

Property and License Tax Records

The following form (see below) has proved very satisfactory. A card is provided for each tax imposed. At the top of the card are twelve monthly sections in connection with which multicolored clips are used to designate months for filing returns, making payments and presenting appeals from assessments to the appropriate tax board.

The tax supervisor during the current month runs through the cards signaled by clips for the following month and withdraws all cards in connection with which some immediate action must be taken. These cards are transferred to the current day tickler file, indexed by days from 1 to 31, and, on the first of the month, all cards indexed by clips for that month are transferred to the current day tickler file, each class marked with its distinguishing colored clips being allocated to a separate section of the file.

JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

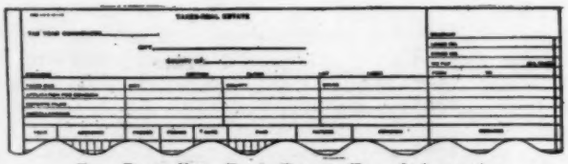
Office:	City	Address
	State	

Tax	Return Date	Last Date to File	Appeal
Payment Due	**Discount**	**Delinquent Date**	**Penalty**

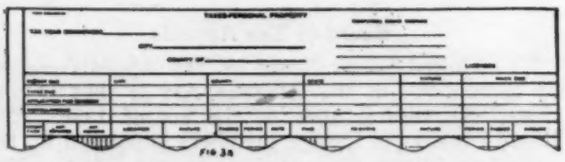
DATE	RETURN MADE	ASSESSED	RATE	AMOUNT OF TAX	REMARKS

Property Tax Record—Information and Diary Card

For real estate a form is used (which see) with main captions showing the date that the tax commences, the city, county, description of the premises, name of company conducting local business (if any), lease number, etc. Sub-captions show when taxes are due for city, county and State taxes, the dates of application for revision for local and State taxes, the filing of reports and miscellaneous. A permanent calendar record for preserving tax information is kept on the main portion of the sheet with the captions of year, assessed, tax, period, rate, nature, revision and remarks. This calendar record with these captions is carried over to the reverse side of the sheet.



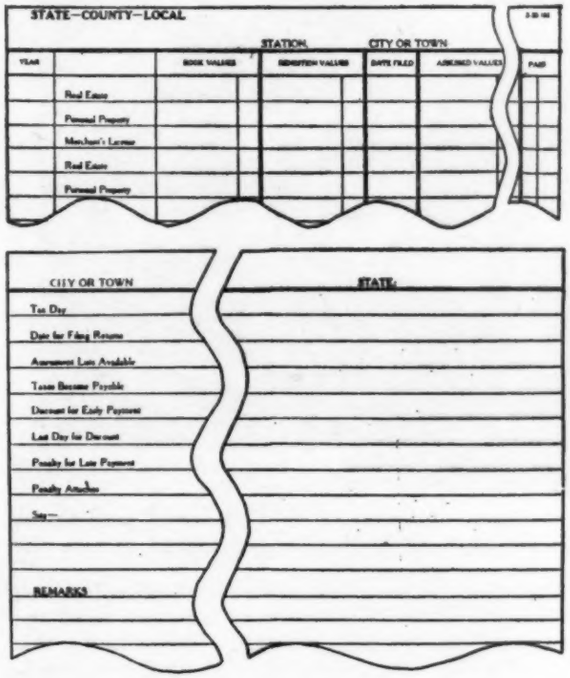
For Recording Real Estate Tax Information



For Recording Personal Property Tax Information

Form for Recording Local Tax Information

For city and county real and personal property taxes and the merchant license tax, one company uses a record card eight and one-half by eleven inches, ruled and captioned for entries showing year, book values, rendition values, date filed, assessment value, rate, discount or penalty, date paid and amount paid. From this record full information covering a period of seven years can be obtained for purposes of comparison or analysis. On the reverse of the record appear captions covering tax date, date for filing return, assessment list available, taxes become



Form for Recording Local Tax Information—Obverse and Reverse

payable, discount for early payment, last day for discount penalty for late payments, time penalty attaches, and site, with space for remarks.

State Corporation and Tax Records

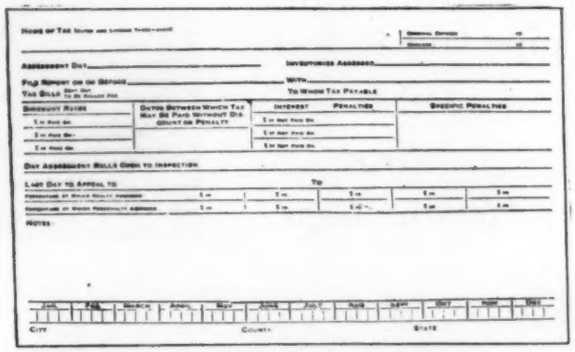
The divergence in character of provisions of statutes in the various States, imposing periodical franchise taxes on domestic corporations and license taxes on foreign corporations doing business in the State, necessitates a careful notation of requirements and an infallible tickler system which will unfailingly bring about compliance with all provisions.

One company uses a card record which indicates designation of taxes, to whom report is returned, due date, extension date, date filed, year ended, filing fee, date paid and amount of tax. These cards are indexed by States and sub-indexed by subsidiary companies within the States.

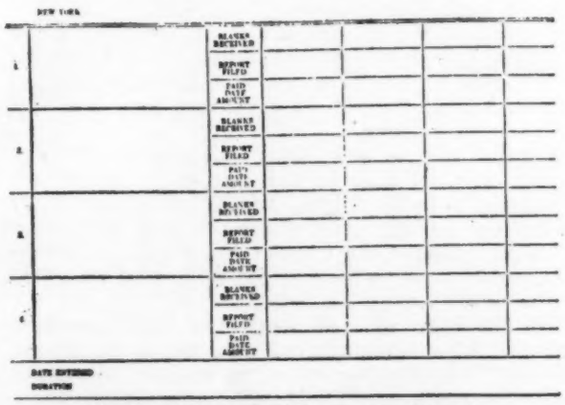
A very complete card tickler system by months embraces all dates on which any action in respect to taxes must be taken. For the current month a daily tickler system is used. The system is planned to give ample notice of any preliminary details, such as writing for return forms, etc.

Federal Tax Record System

Practically the same dairy and record system is used by many companies for Federal taxes and State corporation taxes. One large company has adopted the plan of recording all Federal tax payments for all branches in each State on a card and of keeping upon this form for each State all payments in the nature of franchise taxes and fees for the filing of annual reports. The same form of record card is used for Federal as well as for State corporation taxes (see



Form for Recording Local Tax Information



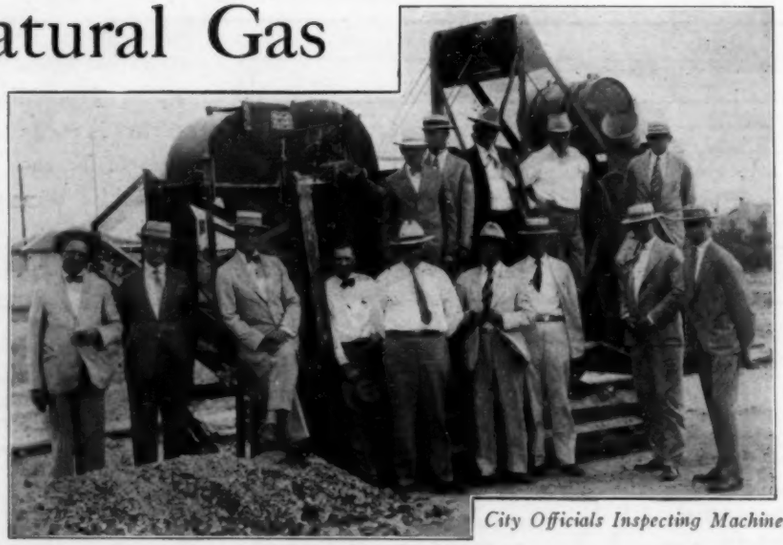
Card Used for Federal Income Tax Records

form). The tab at the top contains the name of the State. Each of the horizontal spaces is used for a different type of Federal or State tax. The vertical columns provide space for five year payments. As tickler clip systems cannot be used on the tax records, owing to the multiplication of items, a separate card system with twelve sections along the top for the twelve months is used for notification of filing date only; payments are made at the time of filing returns and hence require no follow-up. As attention dates are signaled by the tickler system, letters are written to the tax authorities for report forms. After reports are prepared and forwarded with checks, the amount of payment is entered on the record card.

Bringing Natural Gas to San Angelo

Seventy-one miles of pipe laid in forty days

By
Millard Cope



City Officials Inspecting Machinery

THE shrill sound of the city's fire siren, on October 10th last, announced the arrival of Natural Gas into San Angelo, at one time a frontier post on the West Texas border, but now a thriving little metropolis of some 25,000 inhabitants. This event places the city in a position to expand unhampered—industrially and otherwise.

From one of the richest natural gas fields in the State, in northern Coleman County, this modern fuel is brought by the Western Gas Service Company to San Angelo through an eight-inch pipe line, seventy-one miles long.

Natural gas is now being distributed through eighty miles of pipe in San Angelo, a city where the paved streets and gas lines have supplanted the Indian and buffalo trails, where the flare of gas now takes the place of the frontier camp fire, and where the hardships of yesteryear bid fair to be relegated to the past.

For upward of nineteen years San Angeloans were supplied with manufactured gas, the arrangement, however, not proving to be an entirely successful business venture. Dividends were exceedingly scarce and finally the Western Gas Service Company purchased the company for about three-quarters of its cost.

Acetylene First Used

Gas was first supplied to the city by way of an acetylene plant twenty years ago. The little outfit, however, was far from a success and a group of local business men started the San Angelo Gas Company. It was soon forced to suspend operations, but later reorganized and for the first year or so the new company was able to furnish good service to its customers.

At length, however, matters went from bad to worse and it was found expedient to sell the plant, which was bought by Barney Carter, of Ranger, Texas, the original holder of the city's franchise. This transaction became effective in 1927.

It subsequently became necessary to form a new corporation and provide for financing to the extent of approximately two million dollars. To this end the Western Gas Service Company was incorporated and George L. Ohrstrom Company, investment bankers of New York City, agreed to finance the project.

The company took over the existing manufactured gas plant and furnished patrons with gas until the arrival of the natural product. Incidentally this plant is to be kept intact, at least until the city is assured of a definite uninterrupted supply of natural gas.

Late in October the San Angelo enterprise became allied with one of the largest natural gas purveying corporations in the United States as the result of the purchase of the Oklahoma Natural Gas Corporation and other properties by the George L. Ohrstrom Company.

The new corporation will be known as the American Natural Gas Corporation and has been organized to administer the properties involved in the transaction which have a monetary value in excess of forty million dollars.

Huge Gas Reserve to Draw From

One of the greatest assets of the new corporation—and undoubtedly the most pleasing to the San Angelo people expecting to use natural gas during the years to come—is the fact that the new concern controls gas rights on a quarter of a million acres and has gas purchase contracts on 125,000 acres more. A gas reserve comprising more than 100,000 acres in the Panhandle district of Texas is included in the deal, this tract having been acquired from the Phillips Petroleum Company. Other gas acreage is located in the leading Oklahoma gas fields. Present gas output from the 950 gas wells in operation totals more than two and a half billion cubic feet of gas a day, open flow.

More than 2,200 miles of pipe line for the transmission and distribution of gas to patrons of the new corporation are in operation. More than fifty communities with a population in excess of 600,000, including the principal cities of southern Kansas and Oklahoma, are served either wholesale or retail.

Before its merger with the Oklahoma concern the Western Gas Service Company had plenty of proven acreage with which to assure San Angelo of an

ample gas supply. It controls three separate and distinct pools of gas in Coleman County. Should one of these, for any reason, fail, the others would be in reserve.

San Angelo's estimated total gas consumption is around 3,000,000 cubic feet of gas a day, while the four wells on the company's leases have a combined total flow of 50,000,000 cubic feet a day when open. These figures have been closely checked by the Hope Engineering Company.

Further, the company is drilling a fifth well in addition to the four already available.

The largest well is located on the ranch owned by the Overall Estate. This producer, it is estimated, will furnish 3,000,000 cubic feet of gas a day, every day, for ten years, under proper conservation. Two other wells are located on the Morris ranch and the rest on the A. Young farm adjoining it. These wells have all been drilled to what is known as the Morris Sands and they vary in depth from 1,680 to 2,827 feet, with a rock pressure varying from 375 to 780 pounds.

Two Miles of Pipe Laid Per Day

The laying of seventy-one miles of pipe in forty working days, or nearly two miles to the day, is the speed record established by the Atex Construction Company in laying the main line from the Coleman County gas fields to San Angelo. Their contract was signed with the Western Gas Service Company July 25th, and it was around August 10th when the pipe began to arrive. To establish this speed record some 500 men were employed and machinery and equipment to the value of $50,000 were put into use.

The ditch in which the pipe is buried is about thirty inches deep. Eight-inch pipe in sixteen-foot lengths was welded together and then lowered into the ditch and finally the dirt backfilled to cover.

Working on Line Through A Cotton Field

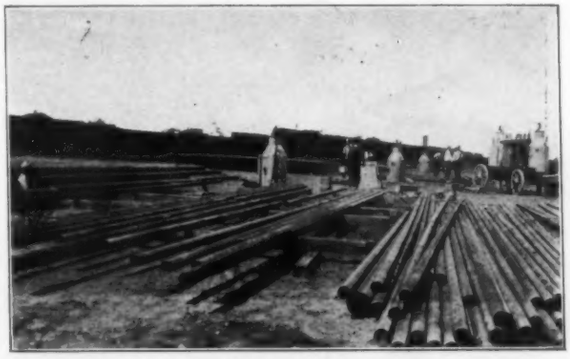
Over mountains and gulleys, through fields of cotton and grazing land, under the bed of the Colorado River, this pipe line is laid so as to be free forever from interference of any kind, and so as to afford a steady and uninterrupted flow af gas.

"So far as we know, nothing but an earthquake, and a big one at that, will ever interfere with that pipe line when we get through with it," one of the engineers said.

Three ditch diggers were used in making the seventy-one mile trench, they being pulled by caterpillar treads. Endless chain bucket conveyors scooped up the dirt from the ditch and others moved it to one side, where it was conveniently placed so as to be pushed back into the trench, after the pipe was welded and lowered.

Equipment Used

The pipe was strung along the open ditch by trucks, having been unloaded at the nearest railroad station. Five trucks were used for this purpose and in addition were used for general purposes in the work. Five tractors were used, some of which were equipped with cranes for lowering the pipe into the ditch.



Welding on Rack at Platform

Enough acetylene welding equipment, including generators and other equipment, to keep thirty welders busy were used and as fast as they fused the ends of the pipe together the ditch was backfilled and the work completed.

The ditch is deep enough to be below the frost line and out of reach of the hot Texas sun so that no undue expansion and subsequent trouble is anticipated. In crossing the Colorado River the pipe was buried under the river bed; hence any rise in that sometimes turbulent stream will never disturb the equanimity of the big tubular gas conveyor.

The most difficult part of the construction work was encountered in crossing the mountains on both sides of Glen Cove. Here there were fourteen miles of country where even the versatile ditchers could not be used. It was just a proposition of the old pick and shovel gang.

Following completion of the main line and a sixteen-mile feeder from another gas field in Coleman County all the men and machinery will be concentrated in San Angelo and the other towns to be served by the gas.

Paved Streets Were Undisturbed

A boring machine was put to work in the City of San Angelo so as to not make it necessary to cut into any paved streets. This ingenious apparatus twists a piece of pipe, to which a drill has been fastened, under the pavement. At the other end the

drill is removed and the gas main hitched to it, the pipe that was used to pierce the hole remaining as part of the gas distribution system. Paving was only cut in cases where a main already under it had to be tapped. Only a small opening over the place where the joint would be cut was made.

Welding Eight-Inch Pipe

That the eight-inch main from the gas fields will be ample to serve San Angelo for many years is evident when it is remembered that San Angelo's estimated maximum appetite for gas is around 3,000,000 cubic feet a day, while the eight-inch main has a capacity of 7,000,000 cubic feet each and every twenty-four hours.

Assuming a gauge pressure of 320 pounds at the field and a maximum delivery of 7,000,000 cubic feet of gas a day, the pressure on the line at San Angelo will be fifty pounds, according to engineers of the Hope Construction Company, associated with the George L. Ohrstrom Company.

This supply will obtain without overloading the line. Inasmuch as all the pipe used in the line has been tested out, and any that will not stand a pressure of 2,000 pounds was rejected, it will be seen that considerable overloading of the line can be resorted to in case of necessity.

A skillful superintendent can "pack" the line at night, during the period of lowest consumption, so that when the peak load comes on in the morning there will be plenty of gas available. This "packing" process, or stepping up the line pressure by filling the pipe full of gas, will give this eight-inch main a capacity of ten million instead of seven million cubic feet of gas a day. This proceeding, however, is not as economical a form of operation as it might be and when San Angelo's gas needs reach this point it is likely that another pipe line will be constructed, according to officials of the Western Gas Service Company.

Reducing the Pressure

Where the main gas line enters San Angelo there is a reducing valve to kick down the pressure from fifty pounds to eight pounds. This pressure is still further equalized by the scientifically designed distribution system which will completely encircle the city, without any "dead end" mains anywhere.

When the natural gas flowed into San Angelo approximately 600 users of artificial gas switched over to using the natural product, and more than 1,000 new customers have signed to use the natural gas. It is estimated by officials of the Western Gas Service Company that 60 per cent of the distribution system has been completed, and that the other 40 per cent will have been completed by December 1.

Miles, Rowena and Ballinger, which are other towns to be served by the line terminating at San

Pipe Crossing the Colorado River

Angelo, will receive gas within a short time. The distribution in these towns virtually is complete.

"There will be no worry about natural gas providing sufficient heat for all purposes," J. H. Morgan, manager, assured San Angeloans. This gas has a British thermal unit content averaging more than 950 and as high as 1,050, which is about double the B.t.u. of the artificial gas formerly used in San Angelo.

Rates for Gas

The domestic rate, stipulated in the franchise given by the city, is 75 cents a thousand cubic feet, or 67½ cents per thousand cubic feet net, deducting 10 per cent on bills paid by the tenth of the month.

Commercial rates of the company vary, according to the amount used. The initial consumption computed at 100,000 cubic feet an hour will be raised to 180,000 cubic feet hourly when the West Texas Utilities Company begins using gas at its superpower electric generating station on Lake Concho, adjoining the city limits. This is the largest of commercial users of the natural product, though a number of other large contracts are being arranged, including the heating of hotels and office buildings in the city.

These rates will be paid the company which spent in the neighborhood of two million dollars in bringing the product to San Angelo.

Hardly had work been started on the line when gas appliance firms began to spring up in San Angelo. The Western Gas Service Company handles appliances and the San Angelo Gas Appliance Company was organized for such. Practically all of the hardware and furniture stores of the city have gas appliances added to their supplies.

The personnel of the Western Gas Service Company includes Barney Carter of Ranger, chairman of the board; L. M. Roberts of the George L. Ohrstrom Company, president; A. T. Knies of Austin, vice-president; E. C. Deal, vice-president, and William Neish, secretary and treasurer.

J. H. Morgan is manager, with W. J. Becker chief engineer, in charge of construction.

Cold Carburetting of Water Gas

Use of natural-gas gasoline by-products as substitutes for gas oil

By W. W. Odell

Fuel Engineer, U. S. Bureau of Mines

[The following article is a much condensed summary of a report on an investigation by Mr. Odell at the Muscatine, Iowa, plant of United Light and Power Company in cooperation with the research staff of Phillips Petroleum Company—The Editor.]

As a result of a study of some of the important properties of the highly volatile members of the paraffin series, particularly those properties pertinent to the generation, distribution and utilization of manufactured gas and as a result of the commercial production of carburetted water gas for a brief period only in a small gas works, using these hydrocarbons as enricher it seems that some quite definite conclusions are justified relating to the possibilities in the commercial utilization of these materials for such a purpose.

The 5 ft. 6 in. water gas set was hand operated in the normal manner, using Boone-Chilton West Virginia coal as generator fuel, making the usual blow runs, but gas oil was not admitted to the carburettor although the blast gas was largely burned therein as usual. The lean gas comprising mixed water gas and blow-run gas was conducted directly to the relief holder uncarburetted. This lean gas was subsequently enriched while still warm at the outlet of the relief holder, from which it was withdrawn quite uniformly by the works exhauster, by the introduction of the gasified gasoline using approximately 9.2 per cent of the latter by gas volume in the production of 565 B.t.u. gas.

Blast Gas Burned in Usual Manner

The blast gas was almost entirely burned in the usual manner in the checker chambers by the introduction of secondary air causing the temperature at the base of the superheater to rise to 1800 degrees F. and that at the top of the carburettor to reach approximately 1900 degrees F. It was believed that at such temperatures much of the tar liberated by the coal during the gas making period would be cracked and gasified. In fact it seems that at 1800 degrees to 1900 degrees F. some of the carbon from the tar and from any blown-over fuel should combine with steam (always present in excess in generator gas) by the water gas reaction. The extent to which this actually happened is obscured by the lack of uniformity in the lump size of the coal used.

The gasoline was used directly from a tank car in which it was under thirty-five pound pressure.

The liquid was withdrawn under its own vapor pressure and caused to pass through pressure reducing regulators, through a vaporizer wherein it was gasified, through an orifice meter and the pipe line connecting it with the lean, unpurified gas. The vaporizer used comprised a simple and small metal tube heat exchanger in which some of the hot water overflowing from the condenser was the heating medium. The latent heat of vaporization of the gasoline was low, hence the high capacity of a small heat exchanger. The hook-up used at Muscatine is substantially and diagrammatically as shown below:

Composition and Calorific Value of Butane-Carburetted Gas and of the Lean Gas

		Lean gas	
	Finished gas*	Mixed blue gas and blow-run gas	
CO_2	7.72	8.6	8.6
Illuminants	.88	1.4	1.0
O_2	.40	.0	.1
CO	22.62	26.4	25.5
H_2	29.00	32.7	32.7
CH_4	6.30	5.1	7.1
Butane-(enricher gas)	9.18	...	...
N_2	23.90	25.8	25.0
Calculated B.t.u.	567	...	...
Actual B.t.u. by calorimeter.	565	...	...
Specific gravity	0.814	...	...

* Some air was added at the exhauster (common practice at this plant) for the purpose of aiding purification.

Results of Actual Test

One grade of G. E. Gasoline comprising chiefly a mixture of normal and iso-butane, but containing approximately 5 per cent of propane and 2 per cent of pentane was used on a commercial scale in the production of carburetted water gas having a calorific value of 565 B.t.u. per cubic foot, the gasoline entirely replacing gas oil, and it was noted that:

(A) There were no complaints of service or quality of gas supplied the consumers.

(B) The quality of the gas made and distributed was readily maintained at the approved standards.

(C) As indicated by the calorific value of the gas at points distant from the gas works the condensation in the mains and distributing system was nil. Prolonged operation using G. E. Gasoline may show that there is a certain amount of condensation in the distributing system, but it is evident that under normal conditions the amount of this condensate will be small and it will not comprise propane, butane and pentane.

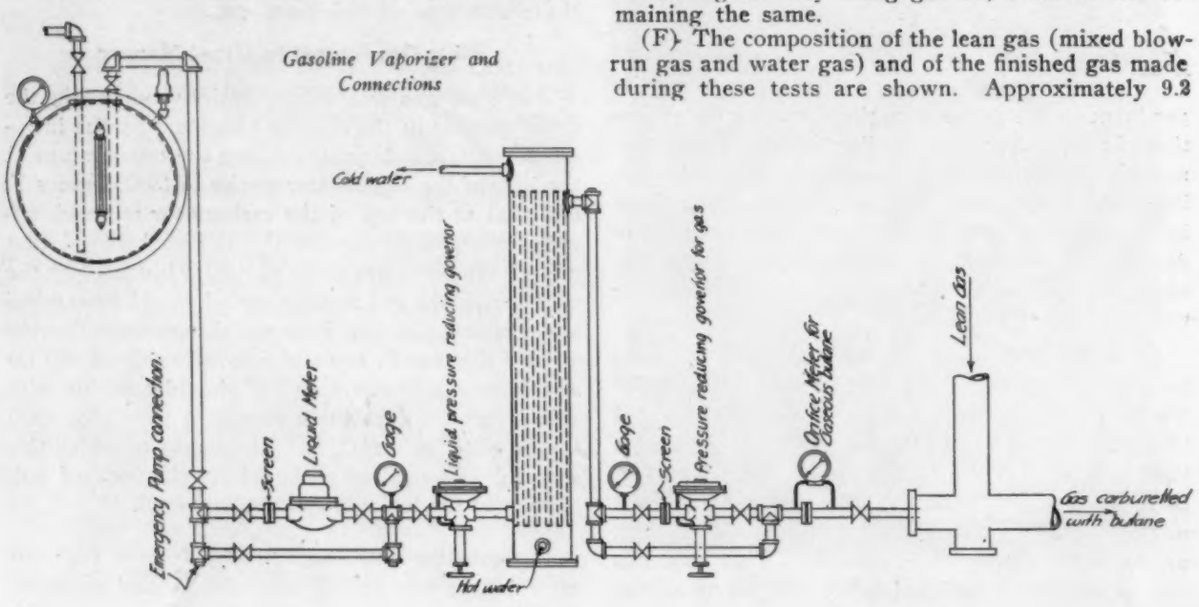
(D) The candle power of the finished gas (enriched with G. E. Gasoline) as revealed by mere observation of the gas when burning from a flat-flame burner tip was somewhat lower than that of ordinary carburetted water gas of the same calorific value when similarly burned.

Specific Gravity High

(E) The specific gravity of the finished gas distributed during the operation with G. E. Gasoline was rather high being 0.76 to 0.82. However, in this connection it will be noted that it has been the practice at this plant to distribute gas containing a high percentage of inerts—CO_2 + N_2—taking advantage of the economies resulting from the use of the blow run, the density of this gas normally being higher than in those plants making either mixed coal gas and water gas or carburetted water gas containing a lower percentage of inerts. Calculations have been made showing that the density of finished, carburetted water gas using G. E. Gasoline as enricher need be only slightly greater than that made in the regular way using gas oil, other factors remaining the same.

(F) The composition of the lean gas (mixed blow-run gas and water gas) and of the finished gas made during these tests are shown. Approximately 9.2

Gasoline Vaporizer and Connections



per cent of G. E. Gasoline (gas volume) was required in the finished gas carburetted to 565 B.t.u. per cubic foot. This is a smaller volume than that of the oil gas resulting from cracking the gas oil used in the ordinary carburetion of water gas, therefore a greater amount of lean gas must be made per M. of finished standard gas when using G. E. Gasoline than when using gas oil; this results in a direct decrease in gas making capacity unless operating changes are made to offset this difference. In the early part of the operation at Muscatine, Iowa, no such changes were attempted and the capacity was accordingly reduced approximately 10 per cent, but subsequently the gas making capacity was raised above normal with satisfactory results.

(G) A small amount of tar—in this case coal tar—was produced in the operation of the water-gas set, the duration of the tests being too short to measure accurately the quantity which obviously must be very small. It was noted, however, that the tar formed had a high specific gravity and settled readily from water without exhibiting a tendency to form emulsions.

(H) The generator fuel per M. of carburetted gas made increases substantially in proportion to the increased amount of blue gas in the finished product. In some of the tests the increase was a little more than this amount for reasons which were evident and could not readily be avoided.

Substantial Economies Indicated

Calculations indicate that substantial economies can be made in the manufacture and distribution of carburetted water gas by the substitution of G. E. Gasoline (cold carburetion) for gas oil at the same price as gas oil. These economies include

(a) A decrease in the consumption of enricher per M. of gas made resulting from the higher calorific value per cubic foot of G. E. Gasoline gas than that of the gas resulting from the cracking of gas oil.

(b) A decrease in the consumption of enricher gas per M. of gas made because of decreased condensation in the distributing system; the gas as made with G. E. Gasoline can have a calorific value 10 to 15 B.t.u. per cubic foot less at the gas works than the ordinary carburetted gas of a given standard without altering the quality of the gas as supplied to the consumers at distant points.

(c) A decrease in the cost of purifying raw gas because of the decreased amount of naphthalene and tar and possibly of sulphur compounds present. With this quality of enricher comprising paraffin hydrocarbons it is possible not only to make a gas which is substantially free from sulphur compounds (organic and inorganic) but the gas should be equally devoid of the gum-forming and resin-forming compounds which have been so annoying in many gas plants in recent years.

(d) An increase in the amount of available waste heat which can be utilized in heat economizers or by a modification of the operating method such as by the use of back run.

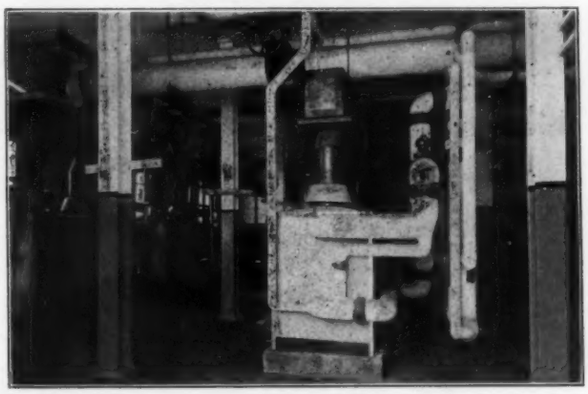
(e) A decrease in the expense resulting from the checkering of the carburetting chambers.

(f) A decrease in the cost of handling and caring for complaints of service resulting from naphthalene stoppages and the like.

It is recognized that normally the chief items tending to increase the cost of the finished gas are a decreased credit from the sale of tar and an increase in the generator fuel requirements. The cost of storing G. E. Gasoline, and it must be stored under pressure, is an item to which an approximate value has been assigned. In some plants where the gas making capacity is reduced a proportional increase in the direct gas generating labor will result. In spite of these facts it is believed that the net result of the change from gas oil to G. E. Gasoline as enricher at a common price will be an economy in the average gas works. In making the latter statement it is recognized that in some plants, namely those in which high oil gasification efficiency is obtained, in which the tar and drip oil are sold at a high price and which are well equipped for the removal of tar, naphthalene and H_2S, it may not be an economy to use G. E. Gasoline at the same price as gas oil.

GAS HEATING INSTALLATION FOR WESTCHESTER LIGHTING COMPANY

The installation consists of six No. 4-G. 18 Ideal Vapor Vacuum Boilers with a Nash Vacuum Return System heating the new ten-story building of Westchester Lighting at First Avenue and First Street, Mount Vernon, N. Y.



This building has a total floor space of approximately 120,000 square feet. There are 19,129 square feet of direct and 498 lineal feet of Aerofin radiation installed.

Each boiler is rated at 6,400 square feet with a gas demand of approximately 3,500 cubic feet per boiler per hour.

It is estimated that five boilers will carry the maximum of heating load during peak of season, thus leaving one boiler in reserve.

The six boilers are connected to a box-header and so by-passed that either group of three boilers may be cut in or out independently.

The flue ducts are entirely of copper.

Rapid Calculator for Flow of Gas, Oil and Water in Pipe Lines

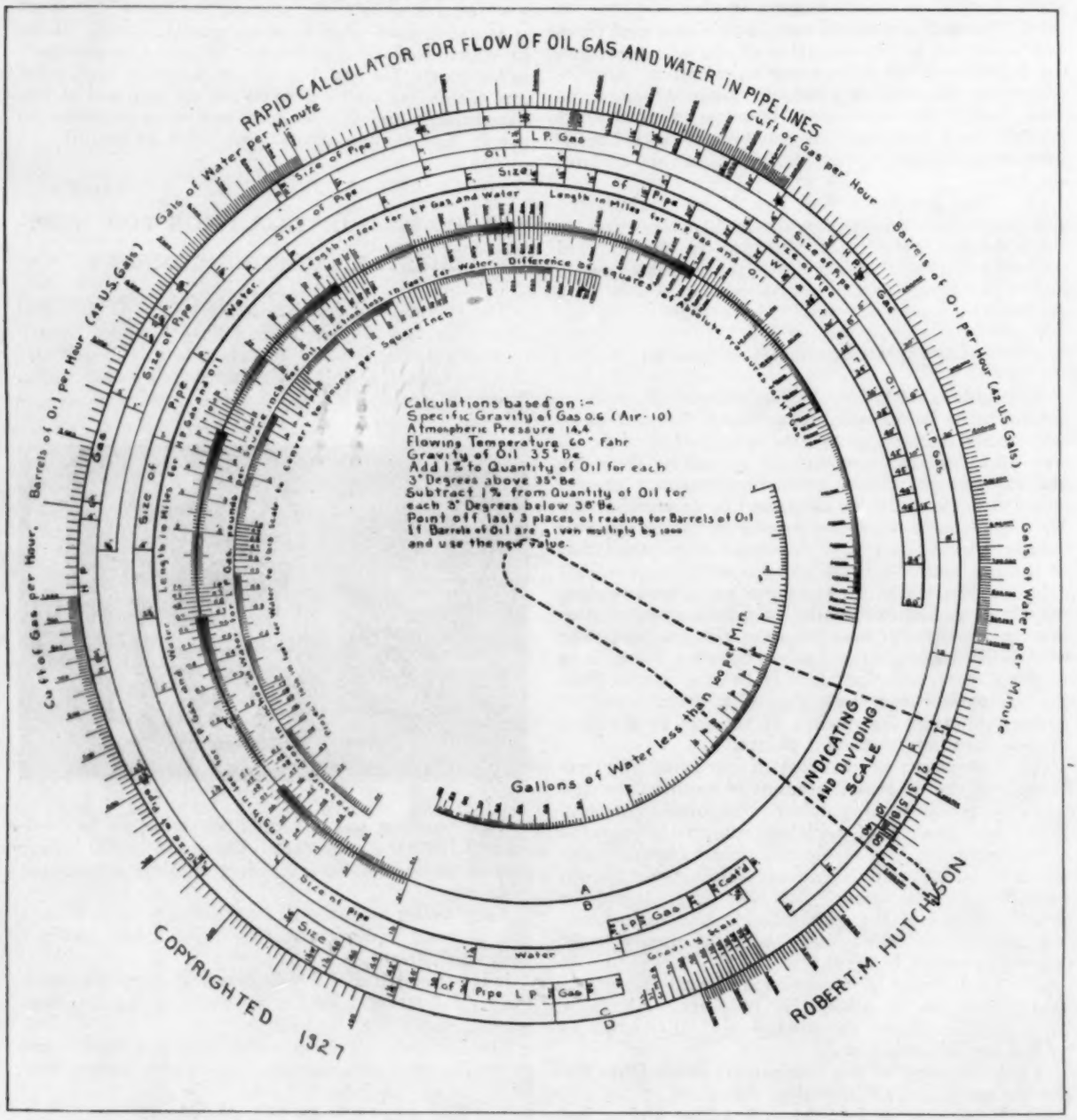
This device will calculate gas flows for both high and low pressure gas and is accurate to within 0.1 lb. for high pressure and 0.01 inch of water for low pressure. Moreover, it will solve for cubic feet of gas per hour, size of pipe, length of line and pressure drop with one setting of the moving radial section.

The gravity scale will enable one to make a correction for any desired specific gravity.

A table of pressures, with each corresponding absolute pressure squared, accompanies the calculator for use in high pressure gas problems. The pressure drop for low pressure gas problems is read direct from the "A" scale in inches of water and the pressure drop in oil lines is also read directly from this scale in pounds per square inch. No calculation for the location of the decimal point is necessary with the calculator.

In using for water flow the loss of head due to friction is expressed in feet of water.

The calculator will give the pressure drop on a low pressure gas line when the load is divided into a number of different parts and distributed over the length of line.


RAPID CALCULATOR FOR FLOW OF OIL GAS AND WATER IN PIPE LINES
Gals of Water per Minute
Cu ft of Gas per Hour
Barrels of Oil per Hour (42 U.S. Gals)
Size of Pipe
L.P. Gas
Oil
Water
Length in Miles for H.P. Gas and Oil
Length in feet for L.P. Gas and Water
Friction Heads in feet for Water. Difference of Squares of Absolute Pressures for H.P. Gas
Friction Heads in Pounds per Square Inch for Oil
Calculations based on :-
Specific Gravity of Gas 0.6 (Air-1.0)
Atmospheric Pressure 14.4
Flowing Temperature 60° Fahr
Gravity of Oil 35° Be
Add 1% to Quantity of Oil for each 3° Degrees above 35° Be
Subtract 1% from Quantity of Oil for each 3° Degrees below 35° Be.
Point off last 3 places of reading for Barrels of Oil
If Barrels of Oil are given multiply by 1000 and use the new value.
Gallons of Water less than 60 per Min.
INDICATING AND DIVIDING SCALE
Gravity Scale
A
B
C
D
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ROBERT M. HUTCHISON

Rigging for Welding Pipe on Barge

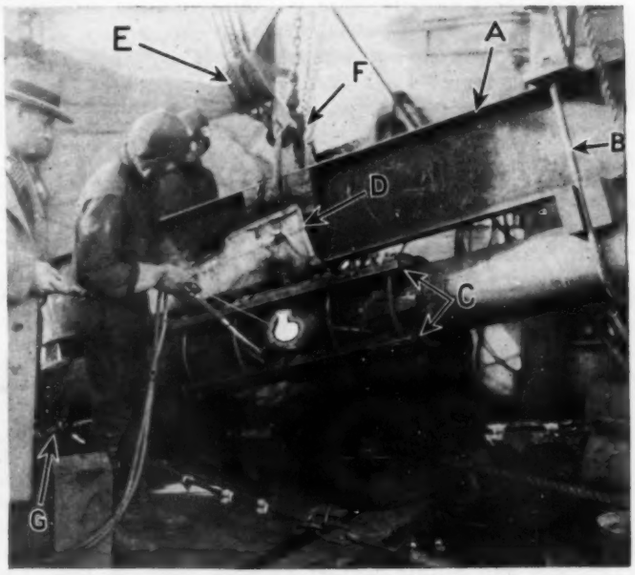
Welding a River Crossing

Severe conditions overcome in spanning icy river for enricher-gas line to St. Louis

PLACING a bottle-tight pair of welded pipe lines under the Mississippi River amid icy flows was a noteworthy accomplishment of the Fruihan Colon Company for the Illinois-Missouri Pipe Line Company, a subsidiary of the Laclede Gas Light Company. This line was required to carry the rich petroleum-still waste gases from the refineries on the east side of the river to the Laclede works where these gases are used for enrichment of the city gas supply.

In addition to the fifteen-mile land line required, a river crossing of two ten-inch extra heavy lines was installed at a point where the river is 1,300 feet wide. Pipe weighing 54 pounds per foot in 36-foot lengths was used with a river clamp consisting of three castings weighing 992 pounds at each weld as an anchor. The line was arched upstream in order that the pressure of the current and the movement of the silt in the river bottom would place the line in compression instead of placing it in tension, as would have been the case if laid straight across or arched downstream. The total length of the crossing lines is 1,500 feet, about 200 feet more than the river width being used to permit this arching.

The rigging to hold the pipe and the clamps used during welding are shown in the illustrations. This welding was done on a barge which was held at the requisite position for each weld by three lines, connecting either to shore anchors or "Chinese" anchors in the bed of the stream. The current running in the river was fourteen miles per hour and at times the heavy icy floes and severe winds added to the difficulty of fabrication. Despite all the precautions which could be taken to hold the barge steady and to shield the line from ice impacts as it hung from the side of the barge, there were times when the pipe joint being fabricated was vibrating through several inches as much as twenty to twenty-five times per minute. When working in the center of the



Close-up of One of the Early Welds

A. 30 ft. length of 16 in. channel used to hold pipe in alignment.

B. U-bolt used to draw pipe against block on underside of channel.

C. Two sections of 3-section river clamp being tried as a clamp for holding pipe ends while welding. This clamp was found unsatisfactory as it did not expose the joint sufficiently. Subsequent welds were made with the clamp shown in Fig. 4.

D. Asbestos cloth used to prevent warping of channel.

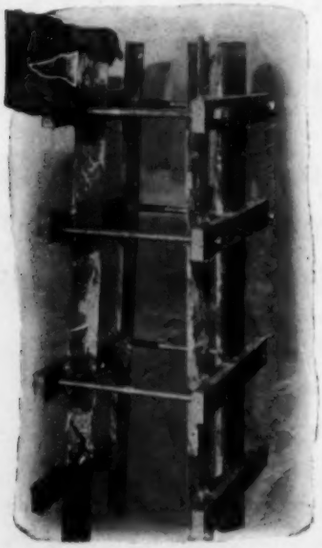
E. Tackle for raising or lowering entire assembly by means of steam winch.

F. Hook from chain hoist used to assist in handling channel clamp.

G. Collar type clamp used to hold pipe to barge by means of cable and turnbuckle fastened to stanchion on opposite side of barge.

channel as much as 135 feet of pipe already welded was in suspension from the welding rig over the side of the barge. Despite these difficulties the first crossing was completed in thirteen days' work and the second, under equal difficulties, in six working days.

Tests of the work completed were made every night by air pressure at 125 pounds per square inch. No leaks were found during the entire fabrication and the lines were completed in bottle-tight condition.



Left
Clamp to hold pipe during the welding

Right
Pipe line hanging over the sides of barge

Illustrations by courtesy of Linde Air Products Company

The Seventh Meter Short Course Held at Ames, Iowa, Is an Outstanding Success

By Special Correspondent

IN SPITE of the weather the Seventh Short Course held under the auspices of the Mid-West Gas Association and the Iowa State College was a success and outdid former courses, both in the matter of men registered and interest taken.

The total registration for the Course was 149, and of this number 69 were registering for the first time. To have more than 40 per cent of the attendance registered as freshmen shows that the Course is not losing in popularity and that the heads of companies who send their men to Ames are able to see the benefits.

The Course this year was divided into three sections. Section "A" was for those who wanted shop practice under the direct supervision of experts and had a registration for each section of between 30 and 35 students. Records show that the minimum was 30 and the maximum was 35. Section "B" was for those who wanted to hear distribution subjects discussed and was the best attended. The average attendance at the nine sessions of this section was thirty-seven. Section "C," for those interested in production subjects, had an average attendance at its five sessions of thirty-five men. Sections "B" and "C" were adversely affected by the bad weather conditions which prevailed at the time. The result was that Section "C" lost about 25 who had signified their intention to come, and many who were in town were unable to get to the meetings. A joint session of Sections "B" and "C" had an attendance of 67. This was on the worst day, so far as weather was concerned.

Analysis of Attendance

A little further analysis of the registration and attendance at the sessions discloses that 122 men attended the fifteen sessions of Sections "A" and "B" at least once. Of the above 122 men, only one attended eleven sessions, which number was attained by attending two sessions which were going on simultaneously. Six men attended ten sessions—which was considered a full roster. Twenty-two men attended five sessions, and nineteen men attended two sessions and another nineteen attended only one. Some of these men traveled upwards of 200 miles to hear one discussion and felt well repaid.

The quality of the papers discussed was high and the presentation of the papers was excellent.

Touching upon problems that are now pressing the gas industry as important were papers on "High Pressure Distribution," "The Theory of Combustion," "Water Heating," "House Heating," "Tar Emulsions" and "Utilization of Steam." The high spots in the above discussions, briefly stated, were as follows:

High pressure distribution is the coming method by which gas companies will use to the utmost limit money invested underground. That this kind of distribution is practical and safe and has been used long enough by the pioneers to be no longer an experiment is certain. It would pay men in the industry who are planning distribution systems to give high pressure serious consideration from every possible angle.

Should Know Theory of Combustion

The theory of combustion paper and discussion evoked great interest. This paper throws light on a subject which gas men can not evade even though they would. Industrial gas is to be the field of the gas men's endeavors and it is up to the gas men to understand the theory of combustion to the end that they may be able to tell manufacturers the way to build what they want so as to sell both the appliance and the gas. The paper on the theory of combustion was very well presented and brought forth spirited discussion.

The technicalities of house heating were presented in the paper on that subject. Preliminary surveys of the territory and careful analysis of the house heating loads were presented as prime requisites prior to a company deciding to go after house heating through the making of attractive rates for gas. Many companies have reduced their rates to get business and later found that the actual getting of business was done at a loss. It is easier to reduce rates than to increase them, and the embarrassment of finding that house heating has been taken on at an unprofitable rate is something to be religiously avoided. The paper brought out that the house heating load is ours and can be had at a profitable rate. It is therefore important that the preliminary studies cover all angles of the situation and should be entered into by the sales force, the engineering force and the accounting or rate-making force on equal footing.

Consideration of Tar Emulsions

Tar emulsions have been considerably discussed of late at many places. They are as troublesome today as ever. There are many advocates of intensive research to find how they are made. These men, however, will find little help from the rank and file of gas men. Methods of coping with the disposal of emulsions is much more to the desire of the great majority. There has been developed a steam still which does this at a very small expense, less than one-quarter of a cent per gallon of emulsion treated. Sharples centrifuge machines have also done good work and the gas plant having emulsion troubles can do either one of two things and win out. As to the research work in connection with prevention of formation, the gas men say that they are willing to listen at any time to ways and means for accomplishing the desired result, but if the measures to be taken cost more than the benefits will be worth, nobody will try it. High heats, large separators, clean machines and careful separation of the condensates are for the most part recognized as helping and are being practiced, but how they tie together and which is the most important phase has yet to be determined.

Utilization of Steam

Utilization of steam in the gas works developed a fine discussion. Granting economical production of steam is only the first step. Steam can be and is being produced at low cost in gas works today. This condition has come about within the past twelve years. The utilization of steam has come in for study and the over-hauling at regular intervals of all prime movers has for some years been recognized as good practice. This practice, however, has not been taking us far enough, and we will not have reached the maximum efficiency until we can run through the year accounting for all the steam made. There are many plants today where exhaust pipes no longer throw steam to the atmosphere. The use of exhaust steam accumulators, condensing apparatus, holder heating with hot water, etc., can be so tied in with the running of the prime movers that a perfect balance seems quite possible. Especially is this true when a steam accumulator is used in conjunction with heating holders with hot water. The holders present a tremendous heat storage and furnish the antifluctuator for the entire works.

It should be said for the conferences held that sales talk was entirely absent. Each problem was considered from the standpoint of the operator. The Seventh Course was the best so far, but all signs point to a far greater achievement in 1928.

HOW COME, CHICAGO?

In a recent publication the leading article speaks of the "remarkable growth" of househeating by gas in the Windy City. And it is remarkable. From 600 million cubic feet in 1925 to 1,020 million cubic feet in 1926 is a goodly showing, forsooth.

But, like the little violet that blooms unseen, cometh the Rose City, which is but a pigmy compared with the giant on Lake Michigan, and averreth that in truth it has the Windy City outclassed and yet isn't getting any write-ups or front-page scareheads about it. The figures just published for the twelve months ending June, 1927, are:

Portland, Oregon ..... 1,313,926,500 cu. ft.

As against—

Chicago, 12 months ending December 31, 1926..... 1,020,000,000 cu. ft.

And you could cut up Chicago in seven or more slices each with more population than Portland has! In fact, the Chicago clientele is roughly ten times as great.

Roper Color Ranges Make Their Bow to Public

Rockford Company Contributes Big Stimulus to Range Business

QUICK to take advantage of the vogue for kitchens decorated in one color or harmonized color, the George D. Roper Corporation brought out color ranges happily timed in advance of the holidays.

Announcing ranges enameled in colors which a survey of the new idea in home beautification has shown are most popular and practical, the company sprung this interesting innovation on the business as a holiday surprise.

It bids fair to be the most spectacular innovation affecting kitchen ranges in years and seems certain to give a quick boost to the kitchen range business.

Ranges to match harmoniously with color schemes of kitchens is a logical, even necessary, response to the spreading vogue for kitchens of agreement of tints and shades.

Production in Full Swing

The Roper factory is already in production, turning out gas ranges enameled in colors which a study of the present interesting development of kitchen decoration has shown are most artistic and practical. These colors are: Chinese Red, Delft Blue, Jade Green and Canary Yellow.

The colors stand out vividly, giving the kitchen range an attractiveness which goes much further than mere novelty. The colors themselves, treated in a special enamel, are lustrous and set off the lines and outline of the ranges most effectively. While the entire stove is not in color, a portion being in soft gray, the impression is of one color, free from a monotony that all-over color creates. Color so predominates the gray that the eye is not conscious of a difference.

The first Roper ranges to be delivered in color are members of its De Luxe line, the 700 series, which includes both six- and four-burner ranges.

Response Is Hearty

Vice-President Watson E. Derwent stated that never before has his company received so quick and hearty a response to a new model or improvement. Many range merchants who usually exert a rigid conservatism toward anything new, a disposition to hold back and see, ordered as heavily as they were permitted. Everyone realized that color is an unexpected stimulus in the gas range business sure to help all down the line.

Ranges in color give an opportunity for striking display. They are a magnet that draws interest to all ranges.

Merchants of gas ranges see at once that the new ranges in color will stimulate business everywhere. It will, first of all, encourage the replacement of old stoves that ought to go out of commission.

Housewives who have been temporizing on replacements of almost worn out ranges are spurred by the new idea of color to have a color kitchen of their own, and as the keystone of it, gas ranges in color.

Kitchen Is Worthy of Decoration

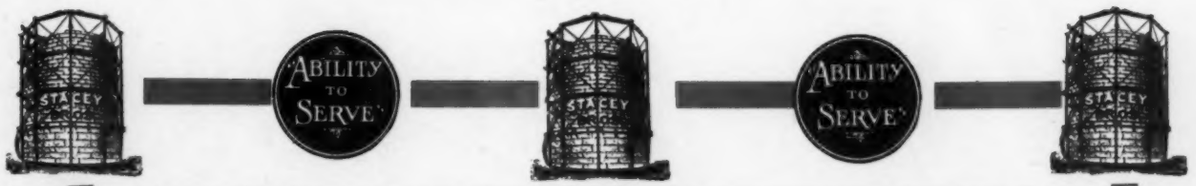
The interior decorator has finally found his way into the kitchen, and stores and shops that have to do with furnishing and equipping the home are looking upon the kitchen, not as a collection of odd utensils, crowded with the jetsam and flotsam of household furnishings, but as a room which can have its setting of refinement as well as any chamber of the house. Already architects and builders are speaking of blue kitchens and yellow kitchens in the same way they recently exploited blue chambers and gold drawing rooms.

In color kitchens everything matches that it is possible to match in color. The chairs and tables, the kitchen cabinet, the walls, the floor, even the clock on the wall, and particularly enameled ware and kitchen utensils are of a prevailing color.

The color range is so dramatically new and its potentiality in business so obvious that whoever sees the new Roper ranges immediately grasps their possibilities.

MONEL METAL VALVES

In important power stations it is now becoming the custom to specify monel metal for valve seats, discs, stems, on gate valves, high-pressure globe valves, etc., where the temperature is 650 degrees F. or higher and where the pressure is 250 lbs. or higher. Monel metal is superior to steel in resisting the erosion and wire-cutting of superheated steam. It also resists salt water and acid water very well. The long list of acids that do not affect monel metal is surpising. In fact it is claimed to be more generally resistant to chemical corrosion than any other commercial alloy on the market today. Although the first cost of monel metal parts is usually higher than without that metal it will doubtless prove to be well worth while in the minimization of shutdowns and replacements. Monel metal is a nickel copper alloy of high nickel content, and is said to contain only 1½ per cent of iron. Its tensile strength varies from 80,000 to 150,000 lbs. per square inch, depending on the temperature. Even at a temperature as high as 1,000 degrees F. its strength is as high as 50,000 pounds per square inch.—W. F. Schaphorst, Newark, N. J.



A REMARKABLE ACHIEVEMENT

The Stacey Bros. Gas Construction Company takes pleasure in announcing the completion of its 10,000,000 cubic foot gas holder in Long Beach, California, more than one month ahead of contract time.

The contract for this holder was awarded **MAY 5th, 1927**, and called for completion of the holder ready for gas by **JANUARY 5th, 1928**, including the construction of a complete foundation with seventeen foot excavation, retaining wall and back fill.

The Stacey Bros. Gas Construction Company started work on this foundation and commenced shop fabrication the day after the contract was awarded.

In less than five weeks the foundation was completed and tools and material began to arrive in Long Beach, practically two thousand miles from the shops in Cincinnati, which in turn had to receive and fabricate steel from the mills rolled especially for this contract.

On **JUNE 13th, 1927**, the erection of the bottom of the steel tank was started.

On **NOVEMBER 17th, 1927**, the holder was ready for gas and completely inflated, requiring only the final coat of paint and final adjustments.

In other words, this 10,000,000 cubic foot holder was ready for gas in practically five months from the start of steel erection and six and one-half months from date of contract, comprising concrete foundation, and including transportation two thousand miles from home.

This record eclipses that of seven months on the 10,000,000 cubic foot holder erected at Buffalo, New York, during 1926.

Surely this demonstrates our

"Ability to Serve"

STACEY BROTHERS GAS CONSTRUCTION CO.

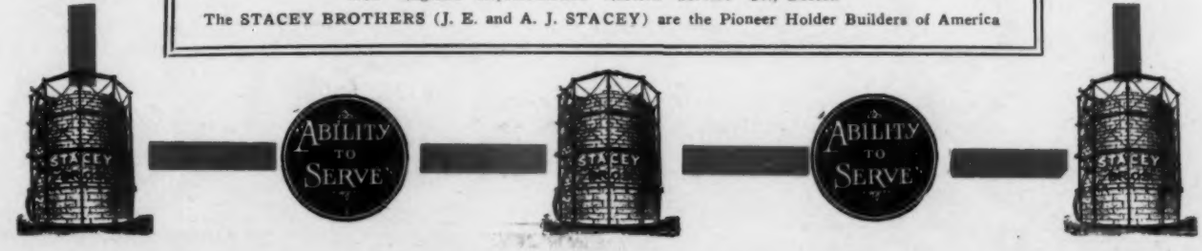
Cincinnati, Ohio

JAMES E. STACEY, Pres.
ARTHUR A. POPE, Sec. and Treas.
ANDREW J. STACEY, Vice-Pres.

WILLIAM A. MILLER, Chief Eng.
WAYNE STACEY, Gen. Sales Mgr.
P. C. RODGERS, Asst. Sales Mgr.

NEW YORK OFFICE—350 Madison Ave.—P. F. McEnaney, Mgr. Tel. Vand. 7219
New England Representative—Eastern Service Co., Boston

The STACEY BROTHERS (J. E. and A. J. STACEY) are the Pioneer Holder Builders of America



"Andy Iron" Says—

"I uster laugh when I heerd tell uv some uv th' fellers who wuz eve'lastingly tryin' to put over one uv them dumfangled perpetool motion machines, but I don't enny more sence I becum acquainted with "Homestead Fires." Winter or Summer, Spring or Fall, they are lively sellers, so they tell me at th' Gas House.

'I don't wunder, becuz they chuck out heat aplenty an', as my grandarter Helen sez, 'Their beauty and natcheral log effect enhances ev'ry decurativ motif.' Sounds like a hull mouthful, but Helen knows a hull lot about decuratin."

Yours truly
Andy Iron

The Season for Homestead Fires is Never Over!

Throughout the year there is always a potential market for these beautiful and utilitarian Homestead Fires. Their usefulness during the season when an abundance of radiant heat is necessary cannot be too strongly emphasized.

During the months when the logs are "cold," they make the most appropriate decoration for the fireplace, because they fit in with every scheme of decorative motif.

Homestead "Coalfire"

Homestead "Woodfires" are exact duplicates of the natural logs our ancestors laboriously hewed; real looking bark, knots and even axe marks, not to be at all compared with the "gas logs" of earlier days.

Homestead "Coalfires" are replicas of the old English Coal Baskets: their antique containers filled with seemingly glowing coals when heat is on and decidedly ornamental when "cold."

These unique novelties provide two essentials much sought for by the modern housewife—the beautifying of the fireplace and a plentiful supply of clean, radiant heat. For these reasons they have only to be demonstrated to be immediately appreciated—the sales easily follow. Progressive Commercial Managers will not hesitate to feature them to raise the sales peak in their department.

HOMESTEAD HEATER COMPANY, Inc.

Selvage Street and Fabyan Place **WALTER KENNEDY, PRESIDENT** **Newark, N. J., U. S. A.**

Nearly One Hundred makes of Gas Ranges use

WILCOLATOR

Oven Heat Control

Why?

1—Because the Range Manufacturer knows that it helps the sale of his product to Gas Companies and Dealers. That is why so many have adopted the *Wilcolator.*

2—Because the Gas Companies and Dealers know that ranges equipped with WILCOLATOR heat control sell faster than any other type. A satisfactory turn-over is assured.

3—Because the Consumer quickly sees the convenience of the WILCOLATOR. Its accurate and dependable features make an instant appeal to the housewife and clinch a pending purchase.

With the WILCOLATOR the accuracy of temperature control can be checked in less than two minutes without heating the oven.

The WILCOLATOR is a dependable and trouble proof heat control. It is a big selling feature for any type of Gas Range.

Gas ranges equipped with the Wilcolator are approved by:

American Gas Association Laboratories — Good Housekeeping Institute

Bulletin No. 208 gives all details. Send for it today.

THE WILCOLATOR CO.

17-23 Nevada Street **Newark, N. J.**

No. 112

No. 65

No. 60

No. 102

No. 85

No. 45

No. 30

No. 25

No. 115A

No. 80

Radiantfire Model No. 90

Every Fireplace a Sales Opportunity

Everyone loves the mellow glow and cozy warmth of a fireplace. Yet in thousands of homes today there are fireplaces which are antiquated, defective, drafty, useless. *Here lies a rich field for profit for Radiantfire Dealers.*

A Radiantfire will make an immediate appeal to these thousands of home owners. Its clean, healthful heat will make the fireplace once more "the heart of the home." Note, too, that the Radiantfire is furnished in authentic period models which harmonize with any decorative scheme.

And here's another thought: for those who have no fireplace, the Humphrey Radiantfire Mantel is easily installed. No skilled labor, tile setting or expensive chimney construction is necessary.

The Radiantfire shown in illustration is No. 120A

The
HUMPHREY
Radiantfire
TRADE MARK REG. U.S. PAT. OFF.

No smoke—No odor
No ashes—No dust

If it isn't a Humphrey it isn't a Radiantfire.

GENERAL GAS LIGHT COMPANY, KALAMAZOO, MICH.
New York · 44 West Broadway San Francisco · 135 Bluxome Street

Progress of the Gas Industry in 1927

Advances and trends noted in manufacture, transmission, industrial sales, and financing

An Editorial Staff Interpretation

Enrichment of Gas

With Low-Cost Materials

THE gas industry has not idly awaited the time when the price of gas oil should become prohibitive for water-gas enrichment. During the past year particularly it has set about determining what use it can make of other enricher materials. Elsewhere in this issue two such economic advances are described. In an article by Odell are given the results of a careful investigation made by the Bureau of Mines as to the use of natural-gasoline by-products for gas enrichment. The installation of a welded river crossing for the Laclede Company, of St. Louis, is another demonstration of means for securing gas enricher from the petroleum industry. In that case the product used is the petroleum cracking-still waste gas that has hitherto been generally used by the petroleum refiner for boiler or furnace fuel.

These are two of the evidences that the water-gas manufacturer need not limit himself for enricher to the conventional types of gas oil.

Long-Distance Transmission

And Low Leakage Losses

LONG-DISTANCE movement of gas at high pressure is a necessity for the industry today. This requirement is imposed by increasing interconnection of companies, by increasing distance from manufacturing works to suburban areas supplied, and by the requirement in modern distribution systems that the low-pressure net work be reinforced by high-pressure feeder lines.

The trend to higher transmission pressures has brought with it, especially during the past year, an increasing appreciation of the seriousness of leakage losses. Companies which in years past would have been aghast if their unpaid customer accounts exceeded one-half of one per cent have not been at all disturbed by leakage losses exceeding ten per cent, and in some instances reaching twenty or more per cent of the total production in small systems. It is now being appreciated that the consequences in the cash drawer are no more serious when customers fail to pay their bills than when the gas which is made at considerable expense fails to reach the customer.

Three important trends are noted for the correction of high gas leakage. More attention is being given to prevention of corrosion on the exterior of the pipe. Study of soil conditions, use of bituminous coating materials, and study of stray-current electrolysis damage are all gaining much of their deserved consideration, but none of these methods appears to have yet been applied to its maximum service possibility. The second major study has been of the internal corrosion damage to piping; and dehydration of gas and reduction of oxygen content of finished gas are the two important improvements contemplated.

The third and possibly the most serious effort in reduction of leakage losses is being made in connection with joint leakage. The industry is beginning to appreciate that a bottle-tight system, such as can be produced by welding, is not an unreasonable requirement for the industry to make of its distribution engineers. Probably in no other single way can the industry make so great a saving as by the effective curtailment of leakage losses. Every thousand feet of gas so saved is clear gain.

Popularity and Easy Money

Aid in Utility Financing

PUBLIC UTILITY securities have come distinctly into favor among all classes of investors during the year 1927. The result has been an exceptionally easy money market for the utility management which was confronted with the need for new funds with which to make extensions or improvements. This advantage peculiar to public-utility companies has been a most welcome supplement to the general condition of easy money. As a consequence utility managements have been able to refinance old issues of securities carrying high coupon

rates, take up short-term paper outstanding at their banks and generally put their financial house in splendid order.

There is every prospect that these favorable conditions will continue during 1928 and those managements which have not yet been able to place their companies on a low cost-money basis will undoubtedly find it desirable to do this during the coming year. Those other managements who are finding need of enlarged manufacturing and distribution facilities will also be able to accomplish their objective at a minimum cost for funds. This is a particularly fortunate condition for the industry, because it comes just at that time when its need for plant replacements and for distribution extensions is at a peak.

General prosperity promises to continue with us at least another year and this means continued increase in the demands for gas-making and gas-distributing facilities. Holding company and local company managements may well congratulate themselves upon the fortunate combination of circumstances which places no financial handicap upon sound investments of this character. If the industry takes advantage of this good fortune without going to excesses in spending, then the public, the investors and the industry will all be the gainers.

Flexibility Achieved In Gas Manufacture

FURTHER demands upon the gas industry have been made by 1927 in the way of wider fluctuation in gas send-out, particularly to meet house-heating requirements. Two distinct advances in manufacturing processes have assisted the industry in meeting these more difficult customer needs. They are the use of the combination oven-heating system and the possibility of making low specific gravity water gas.

The economic and engineering survey of the industry, which has been the outstanding contribution by the American Gas Association for 1927, has clearly demonstrated that the ideal works for big-city gas supply must use a base-load coal-gas plant with a water-gas installation of large capacity to care for peak-load requirements. Laboratory and practical field investigations have proven that such a combination can work with complete success only when reasonable restriction is placed upon the variation in composition and the variation in the specific gravity of the gas supplied to the customers. Hence the objective of further study must be the planning of a system whereby constant conditions of service with wide variation in quantity of gas send-out will be possible, all with a minimum of idle investment.

The "combination" system of heating coke ovens, vertical retorts and horizontal retorts either with the coal gas which they make or with producer gas made in a separate machine is not a new development of 1927. But during this year the increased use of this combination heating system and an increased appreciation of its importance have contributed largely to the potential flexibility in coal-gas productive capacity. Consequently they afford a new freedom in the choice of base-load gas-making equipment.

For admixture with this base-load coal gas it is now a demonstrated possibility that relatively low specific-gravity water gas can be made. This, a definitely new contribution of 1927, is perhaps the outstanding technical development of the year, for water gas of such specific gravity can be mixed with coal gas in almost all proportions without serious effect on the service to the customers. Thus a promise is afforded of great economic advantage to the industry.

Flattening Load Curves With Industrial Sales

MISCELLANEOUS household and commercial uses of gas produce load curves which integrate to about 40 per cent capacity load factors in both gas and electric utility companies. House heating imposes the most disadvantageous load factor which confronts the gas industry, namely about 20 per cent. On the other hand, industrial gas sales usually give at least a 60 per cent load factor and, neglecting hourly peaks which are of relatively little consequence to the gas man, may even afford 100 per cent capacity loads, because they are free from seasonal variations.

The gas industry has only begun to sense this tremendously important factor as a reason for most intensive effort in securing industrial gas sales. But the appreciation has begun to be general and the effort for industrial sales is correspondingly increasing. Even some of the most conservative managements who have long favored, indeed insisted upon, flat rates for gas are now seeking to lower industrial rates in order that they may fill up the valleys in their load curves with this most desirable class of business, and thereby lower average costs for all classes of users. This important trend in the merchandizing policies of 1927 will undoubtedly be even more noticeable during the coming year. It should have every possible encouragement.

Association Activities

A. G. A. and affiliated gas associations' sectional activities and convention calendar

GAS COMPANIES FACE PROSPEROUS 1928

Review and Forecast by Oscar H. Fogg, President, American Gas Association

Not forgetting its material advancement and its rapid march into new fields of utilization, the one factor of brightest significance in the gas industry during 1927 seems to me to have been the extraordinary manifestation of public interest in the present and future development of a business already long past its first century of uninterrupted public service.

The newer domestic applications of gas fuel, such as house heating and refrigeration, have caught the popular imagination. Added to this is an appreciation, widespread and increasing, that the solution of the nation's fuel problem is bound up directly with the problems of energy conservation, industrial efficiency and even public health.

Status of Automatic Appliances

The development of automatic gas appliances for meeting the fuel requirements in the home has already reached a state of perfection which meets the most exacting demands of our customers. The degree to which people avail themselves of smokeless automatic gas fuel for domestic purposes now depends almost solely on the rate for which gas can be purchased in quantity. Most gas companies have already developed rates for house heating for complete fuel requirements in the home which now make it common for one home to be equipped with a heating boiler, automatic water heater, refrigerator, stove, incinerator and various laundry appliances.

The development of appliances and rates for a wider application of gas in industry has also reached a point where gas is now recognized as the cleanest, most convenient and sanitary fuel for manufacturing purposes. Plant engineers now recognize that gas has many intangible values which should properly be considered when comparing costs. Complete cost analysis invariably shows gas to be the cheaper fuel, even though a direct comparison of fuel alone may indicate that gas is slightly more expensive. The cost of labor and the value of property is, in most communities, reaching such significant figures that fuel cost is secondary. Invariably the use of gas results in space conservation and improved working conditions.

CONVENTION CALENDAR

FEBRUARY

15-16 New England Gas Association. Annual meeting, Boston, Mass.

MARCH

10-11 Accounting Section, Empire State Gas & Electric Association. Annual meeting, Briarcliff Lodge, Briarcliff Manor, N. Y.

13-14 Oklahoma Utilities Association. Annual meeting, Tulsa, Okla.

14-15 Illinois Gas Association. Annual meeting. Springfield, Ill.

APRIL

5-6 Eastern States Gas Conference, Newark, N. J.

12-13 Women's Section, Empire State Gas & Electric Association. Annual meeting, New York City.

17-19 Southern Gas Association. Annual meeting, Jacksonville, Fla.

24-26 Midwest Gas Association. Annual meeting. Place of meeting not set as yet.

MAY

3-5 Southwest Public Service Association. Annual meeting, Dallas, Tex.

6-11 Natural Gas Department, American Gas Association. Annual meeting, Texas State Fair Grounds, Dallas, Tex.

JUNE

21-22 Canadian Gas Associated. Annual meeting, Hamilton, Ont.

28-29 Commercial Section, Empire State Gas & Electric Association. Annual meeting, Utica, N. Y.

Notable Advances

Gas companies have learned, not only to produce, but to market, the valuable by-products of gas manufacture. Important experiments in combustion and long distance transmission of gaseous fuel have, in many places, reached the stage of practical application. The waste of natural resources, the effects on life and property, resulting from the use of raw fuel in various forms has encouraged the gas industry to substitute its product for the belching chimneys of urban residential and industrial communities.

The year just past has been one of education, resulting almost as much as anything else, from a quiet but persistent demand on the part of the public to know more about the intricacies and future possibilities of gas utility service in all its branches. Such information has been provided in full measure.

Planning for the Future

The gas industry builds, not for the year immediately ahead, but for five, ten and even twenty-five years. Additional gas making capacity under construction at the present time is designed in most cases to take care of increased future demands as well as to relieve the pressure on present facilities.

The year to come, in my judgment, will continue to witness the steadily widening availability of gas fuel, both as the result of the gas companies' initiative and of the desire for clean, efficient and economical heating service on the part of manufacturing concerns as well as the general public.

Milener Appointed Industrial Gas Research Representative

Eugene D. Milener, of the Consolidated Gas Electric Light and Power Company, of Baltimore, Md., is now Industrial Gas Research Representative of the American Gas Association.

Mr. Milener's new duties will include contact and field work for the A. G. A. Committee on Research in Industrial Gas Utilization. This committee has direct charge of the $500,000 research program of the association.

He is a graduate of Baltimore Polytechnic Institute and the University of Maryland. He entered the employ of the Baltimore Company in 1910, and since that time has served in various departments, including merchandise, main extension, general service, house heating, and industrial fuel.

In 1915 and 1916 Mr. Milener conducted original tests in Baltimore from which the gas house heating business of the city has developed. When he severed his connection in Baltimore he was supervisor of fuel sales.

Mr. Milener has been especially active in committee work for the American Gas Association and has also written extensively on industrial applications for gas and the use of gas for house heating.

Technical and General MISCELLANY for The Busy Gas Man

SEPARATING OIL FROM BOILER FEED WATER

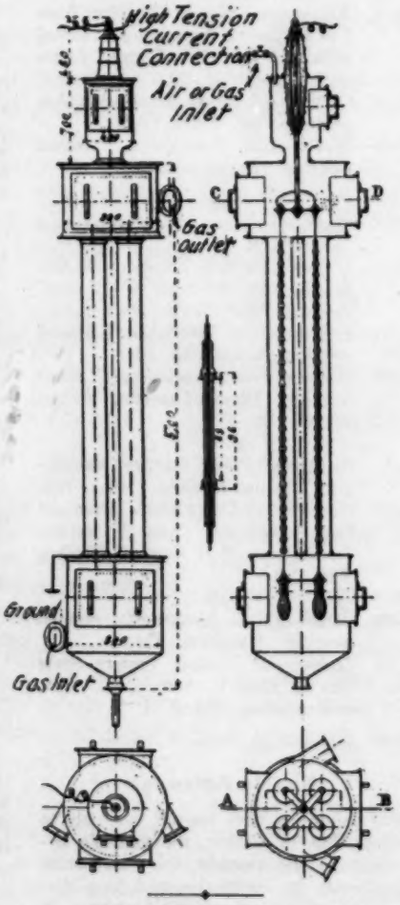
The boiler feed water must not contain oil. If it does, the efficiency of the boiler is materially diminished, due to the oil coating the surface and reducing the heat transmitting capacity. Furthermore, the plates will be overheated and bulging will take place. The oil is generally separated from the water by centrifuging apparatus or devices of the baffle type, but while this removes the bulk of the oil, traces remain which must be removed by other processes. The usual method is to coagulate the globules of oil by means of aluminum sulphate or alumino ferric and sodium carbonate. The precipitate is removed by passing the water through wood pulp filters, the oil being entrained in the precipitate.

The oil may be electrically removed by passing a current between iron electrodes in a wooden tank containing oily water. The current destroys the emulsion and causes the globules of oil to flocculate and they are thus separated. The water is slightly acidified in order to increase its conductivity. The operation is best carried out in a hot solution. —W. G. Carey, Fuel Economy Review, VI, 1927.

ELECTROSTATIC PRECIPITATION OF TAR

A paper read at the recent Fiftieth Annual Congress of the French Gas Industry described a tar precipitating apparatus which is used in the Marseilles gas works. The construction of this apparatus is shown in the accompanying illustration. The apparatus was used for experimental purposes and was located at the outlet of the condenser before the extractor. The electrodes were made in cylindrical form out of brass. The low tension current was a three phase 190 volt current, 25 cycles. The voltage was stepped-up in a suitable transformer 220/50000 volts, which fed a rotary rectifier operated by a four pole synchronous motor. A variable resistance was inserted on the low voltage line for the purpose of regulating the voltage of the current fed to the transformer and thus the voltage fed to the precipitator.

It was determined that the efficiency of the precipitator was constant at all times and that approximately ninety per cent of the tar was removed.—Le Gaz et L' Electricite, 1927, pages 74-6.



SAND BLAST FOR CLEANING STOVES

The old range and other gas fired apparatus which the gas company is asked very often to take in partial exchange for new appliances must be reconditioned before it can be resold. This means that grease, dirt and scale must be removed, which is often more of a task than it first appears. Many methods have been used but, according to the Gas Journal of London, November 16, 1927, pages 470-1, the best method is to use a sand blast. It has been found that the cleansing operation is materially speeded up in this manner. A special type of sand blast cleaner is used for this purpose. The range is first placed in an incinerator where the grease is burned off, and then it is placed in the sand blast machine. The door is closed and the blast of sand is turned on, while its cleansing action may be observed through a window. The pressure of the sand is 20 pounds per square inch. Means are provided for separating the dust from the air exhausted from this machine.

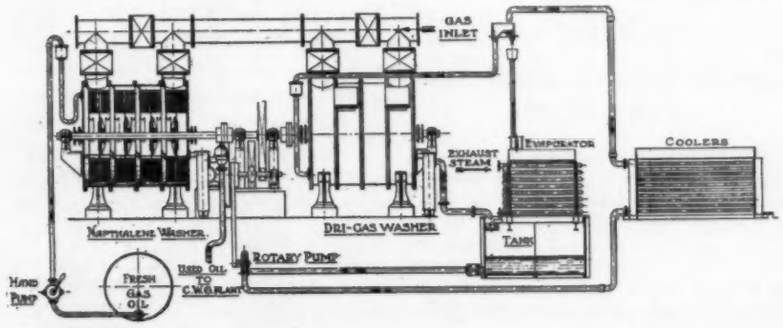
BASIC THERMAL PRINCIPLES IN HEATING COKE OVENS

A very thorough discussion of the basic principles that underlie the heating of coke ovens recently appeared in Das Gas und Wasserfach, 1917, pages 1061ff, written by Dr. H. Baer and Dr. H. Dormund. This article first concerns itself with the basic principles and problems involved in the construction and heating of coke ovens. Practical experiments are described which help to give a better conception of the problem. The testing apparatus is described in detail. Various factors investigated were the transmission of the heat through the heating walls of the oven, the formation of flame within the heating flue, the influence of the admission of gas and air, the temperature conditions within the heating wall and the heating flue, the relation existing between the influence of the addition of gas and air and the height of the heating flues, the connection between the temperature of the oven walls and the coking of coal. The fundamentals of correct, that is efficient, "vertical heating" of the coke oven are developed. Heating the coke oven according to the system in which the admission of air to the heating flue takes place in stages is described and its advantages pointed out. The vertical, tapered coke oven chamber is also described as well as the static pressure ratios that exist in the heating system. These pressures are explained. Another phase of the general subject which receives consideration is the transmission of heat through gas radiation and convection at the different gas burners and with different excess of air. Finally the article ends with a description of the construction of the heating flues in accordance with a special graphical method.

The coke oven selected for these experiments was of the ordinary type, but specially arranged for this purpose. Various points were selected at definite heights above the sole of the furnace at which temperature and other factors were measured.

PARTIALLY DRYING GAS

A complete study has been made of the advantages and of the methods available for removing moisture from gas. The use of various drying reagents is described and the particular features of each process are given. Then a complete description is given of a process which is carried out in the apparatus shown in the accompanying illustration.



The installation consists of a rotary brush scrubber washer in two sections, each of six chambers, driven by a steam engine placed centrally between the sections. The first six chambers are provided with calcium chloride solution for gas drying and the second six with gas oil for naphthalene scrubbing. The plant also consists of a cast iron rack evaporator for the concentration of the used and dilute calcium chloride solution, the exhaust steam from the washer engine being more than sufficient for this purpose. A cast iron tank for the calcium chloride solution is located near the washer so that the washer overflow flows into it by gravity. A cooler is provided for cooling the calcium chloride solution which is heated up, due to the reaction between the water and the chemical.

A forty per cent calcium chloride solution is used, being constantly circulated through the apparatus. About five per cent of the solution is withdrawn and sent to the evaporator for concentration, while the remainder is allowed to continue in its circulatory path. It was found that the absorption of the moisture in the gas was very rapid, being practically completed in the first four chambers. As long as the specific gravity of the solution is kept as high as possible and its temperature as low as possible, good results are consistently obtained. Supervision of the plant consists only in determining the temperature and the concentration of the calcium chloride solution.

Considerable detail is given in the original article on the cost of the process and on the actual results obtained with it. Curves and tabulations are included as well as a complete description of a test for moisture in gas. This article or paper, which was read by C. Harris at the meeting of the Southern Association of Gas Engineers and Managers in England, was very fully discussed and the practice of removing moisture from gas was advocated as one which possesses considerable advantage for the gas industry. For further details the reader is referred to The Gas World, 1927, pages 474 to 483.

METHYL CHLORIDE AS A REFRIGERANT

The entrance of the gas industry into the refrigerating field has brought about a certain general interest in refrigerating systems and the like and also in the possible refrigerating mediums which can be used in the place of the common ones. Methyl chloride is a subtance which possesses many advantages as a refrigerant, although its use has not reached any great proportions as yet. C. S. Marvel, H. J. Macintyre and G. S. Ford discuss the physical and chemical properties of this substance in Refrigerating Engineering, 1927, volume 4, pages 115 to 120.

Such characteristics as stability toward heat, corrosive action on metals that are commonly used in making refrigerating apparatus parts, effect on viscosity of oils, toxicity, tendency of the liquid to form explosive mixtures with air, etc., are described. The conclusions state that methyl chloride is a stable substance up to a temperature of 800 degrees F, even in the presence of metals. It does not corrode the metals used in the construction of the apparatus. It is stated that methyl chloride has chemical properties which make it well-suited for use as a refrigerant.

EFFECT OF ASH CONTENTS OF COAL ON GASIFICATION AND CARBONIZATION

A study was made to determine the reactivity of special cokes which were made by the carbonization of coal at 1,000 degrees. The original ash of the coal was one per cent and small quantities of various oxides were added to the coal in order to bring the ash up to a maximum of five per cent. Various tests were then made with the coals and the cokes obtained from them.

Nitrogen saturated with steam was passed through a column of the coke at a temperature of 1,000 degrees and the products were collected and examined. The percentages of steam decomposed by the "pure" coke and by cokes produced by the addition of one per cent ferric oxide, sodium oxide (as sodium carbonate) to the coal were 62.7, 86.3, 88.4 and 74.8 respectively. Similar increases in reactivity were observed on the addition of the same oxides to a coal containing 4.5 per cent of ash. A similar increased activity towards steam was observed in the coals at temperatures between 1,000 and 600 degrees.

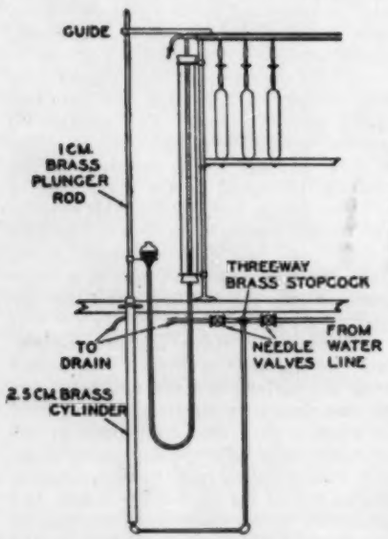
Carbon dioxide was then passed over the column of coke and the resulting gases were analyzed. The addition of sodium carbonate to the coal produced a great increase in the reactivity of the coke as measured by the percentage of carbon dioxide reduced, but this reactivity fell off rapidly with time. The iron oxide coke was initially more active than the lime coke, but fell to a value between that for the latter and that for "pure" coke.

An oxygen-nitrogen mixture containing two per cent of oxygen was passed over the surface of a piece of coke, one to two square centimeters in area, held in position in a tube maintained at 800 degrees. The activity, as measured by the rate of combination with oxygen, varied a little for the various cokes, and appeared to be determined mainly by the rate of diffusion of oxygen to the surface of the coke. There are, however, wide differences in the behaviour of the cokes toward oxygen at temperatures within the range 400 to 700 degrees C. The iron oxide coke appears to be definitely more reactive than the "pure" coke. The sodium carbonate cokes behave abnormally, exhibiting a slow rate of combination with oxygen below 600 degrees C, and a marked increase in the rate when the temperature has passed that point. There is no connection between the reactivities of coke toward oxygen at low temperatures and at high temperatures. Experiments on the readiness with which cokes heat up were carried out by passing a stream of air through a column of coke initially at a temperature of 700 degrees C, and

determining the temperature attained as a function of the time. The results indicate that in industrial operations where high temperatures are required in a bed of fuel, a coke with a low reactivity toward carbon dioxide will be more suitable than one with a high reactivity.—J. A. Sutcliffe and J. W. Cobb, F. J. Dent and J. W. Cobb, and W. R. Branson, Fuel, 1927, volume 6, pages 449-472.

HYDRAULIC LIFT FOR GAS ANALYZING APPARATUS

The accompanying illustration shows a simple device for lifting and lowering the mercury bulb of a gas analysis apparatus. It is specially useful where a large number of analyses are made. The operating power is water pressure, which raises and lowers a plunger which carries the bulb support. With the three-way cock in one position water flows into the cylinder and raises the plunger until the overflow pipe is



reached. During this upstroke the gas to be analyzed is forced into one of the pipettes, where it remains until the three-way stop-cock is shifted to the other position. The weight of the plunger and the mercury now forces the water out of the cylinder and into a drain, the gas being drawn back into the burette at the same time. At the end of absorption the mercury is leveled by moving the bulb up and down on the plunger rod.

The brass cylinder should be about 2.5 centimeters inside diameter. The length varies in accordance with the length of the burette. About 15 centimeters should be allowed for connections. A plunger rod of one centimeter diameter is rigid enough for this purpose. The length should be such that when the plunger is at the bottom the rod will project several centimeters above the guide. A leather washer serves well as a plunger.

The device can be made entirely automatic with the exception of leveling and reading. A simple mechanism for shifting the stopcock lever at the end of each stroke, either mechanically or electrically, can be built for this purpose.—E. J. Tauch, Industrial and Engineering Chemistry, 1927, page 1349.

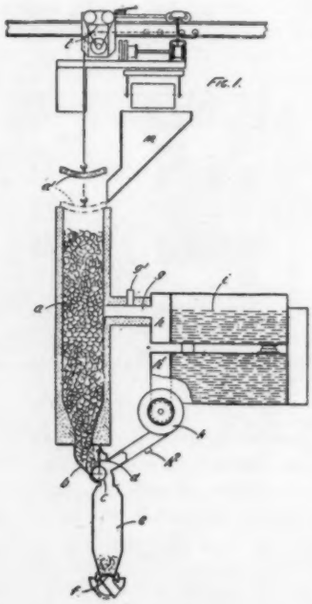
DETERMINING NAPHTHALENE IN GAS

An apparatus consisting of two concentric glass tubes is inserted into the flow of gas, the inner end of the outer tube being stoppered, while that of the inner tube is perforated. The gas enters through the side of the outer tube, is filtered in the annular space (which is packed with glass wool), and passes out through the inner tube to a condenser and finally to a vessel where its temperature is reduced to zero degrees C. The deposited naphthalene is separated from the condensed water, dissolved in a known volume of warm acetic acid, cooled to a temperature of 17 degrees C, and water is added until the first traces of naphthalene are precipitated. A graph is given showing the relation between the volume of water required to produce precipitation and the quantity of naphthalene in solution.—Bulletin Societe Chimique Belg., volume 36, pages 485.490.

COKE COOLING PROCESSES

While the ordinary dry coke cooling processes will recover heat, nevertheless maximum recovery of heat can take place only if the temperature of the coke entering the recovery apparatus is maintained as constant as possible. The process and apparatus, which is patented in French Patent No. 616,651, are intended to provide means for obtaining this condition. Thus an appreciable mass of hot coke is maintained above the coke mass, through which the cooling gases are made to pass and the hot coke is made to advance toward the current of gas at a speed which is maintained as constant as possible.

The apparatus is seen in the accompanying illustration. The chamber is always filled with coke. The top of this chamber is normally closed by means of the cover a^1. When this chamber is ready for another load of coke, which of course depends on the rate at which the coke is removed from the chamber at the point b, the cover a^1 is lifted and the coke is discharged from the traveling conveyor 1 into the hopper m, and thence into the chamber a. The conveyer then moves away and the cover a^1 is replaced to close the top of the chamber a. The level of the coke in the cooling chamber is never allowed to drop below the point g.



As is commonly known, it is advisable to replace either continuously or intermittently a portion of the gas in circulation by a corresponding proportion of air in order to burn all the combustible gases that are formed in the cooling chamber. French Patent No. 616,651. (Woodall, Duckham, Ltd., and J. W. Reber.)

LIGHTNING PROTECTION FOR OIL STORAGE TANKS

The problem of lightning protection is discussed in a very detailed manner from all standpoints. One important conclusion that is reached is that the di-electric, that is, non-conducting, qualities of the oil that is being stored does not have an influence in causing lightning or in inducing lightning to strike the oil in storage. It has been found that protection by properly insulated towers is very satisfactory, but even this is not an absolute guarantee that the oil tanks will not be injured by the lightning. The reader, who is interested in this subject, is referred to the original article by R. W. Sorensen, S. H. Hamilton and C. H. Hayward in Journal of the American Institute of Electrical Engineers, 1927, pages 859 to 868.

STARTING JOINTS IN OLD PIPING

Old steam, water and similar piping always make trouble when they have to be taken down due to the fittings being frozen tight to the pipe. There is generally a tendency to apply too great a twist to the pipe and the result then is that either the pipe or the fitting or both are spoiled. On the other hand, there does not appear to be any quick way of taking down the pipe by the use of force alone, unless great pressure is exerted. Nevertheless, there is a better method and one that will ensure the pipe and the fittings remaining in good condition during their removal. This method consists in the quick application of intense heat, so that the fitting is suddenly expanded. Intense and quick heating is obtained by means of molten lead. The lead is heated and melted on the ordinary plumber's heater and is poured from the pouring ladle in a small rapid stream directly over the fitting. A dish is held below the fitting to catch the molten lead, which is then returned to the pot on the heater before it hardens. The heat will cause the fitting to expand and then the threads can usually be started without any trouble immediately after the heating.—The Sanitary Age, July 22, 1927.

ECONOMICS OF COAL CARBONIZATION IN THE UNITED STATES

The general progress of the industry is discussed, starting from the early carbonization processes right through to modern times. The author emphasizes the importance of the adaptability of the coke to the operation of the blast furnace. The production of coke in the United States, the development of coke manufacture from the beehive coke oven stage to the by-product coke oven, the ammonium sulphate situation and the like are discussed. Thus it is pointed out that the market for ammonium sulphate will be markedly affected by the price of Chile saltpeter. If the price of this substance is lowered, then the market for ammonium sulphate will suffer, for both substances are used for fertilizing purposes on a purely competitive basis. A general discussion is also included of the general character of the domestic fuel industry, the use of soft coal and the inroads made by other fuels on the coal field. It is stated that high temperature coke is the superior product compared with cokes made by other processes.

Certain attention is paid to the low temperature carbonization development. The general engineering and economic characteristics of the process are described. Low temperature processes are divided into three general classes: First, those which are carried out in externally heated retorts; second, those that are carried out in internally heated retorts, and third, the complete gasification process.

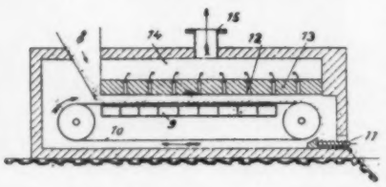
The following tabulation is a comparison of the yields of gas, coke and by-products obtained on the average with these different processes and those obtained from the average high temperature process.

Yield	Externally heated retorts.	Internally heated retorts.	Complete gasification.	Average high temperature process.
Gas production in cubic feet per ton of coal	5,200	35,000	112,000	11,000
Ammonium sulphate production in pounds per ton	18	22	45	25
Light oil production in gallons per ton of coal	2.5	2.0	3.0	2.5
Tar production in gallons per ton of coal	18	16	24	12
Capital cost per day throughout	$2,500	$2,400	$1,900	$2,500

The obstacles to the development of the low temperature carbonization process have been the mechanical difficulties surrounding the large scale operation of the process and thermal difficulties as well. The general conclusion is reached that the high temperature carbonization processes are too well established and the products, particularly coke, that is recovered from them is of such economic importance that their position will remain unshaken. On the other hand, under certain special economic and industrial conditions, as, for example, in certain locations in England, the low temperature carbonization process has met with some economic success.—G. A. Orrok, Mechanical Engineering, 1927, pages 1055-1060.

CARBONIZING FURNACE

An interesting type of coal distilling or coke furnace is shown in the accompanying illustration. The coal is made to pass in a thin stream along one side of the furnace, 1, this coal being heated on one side only. A wall is placed close to the layer of coal on the side that is not heated. This wall is made with



openings 5, through which the distillation gases escape. The number and the location of these holes are such that the gases or vapors evolved from the coal are immediately removed in small quantities at the points where they are formed. Thus the gases are not made to come into contact with the hot material in the furnace, which means that they are entirely unaffected by the heat in the apparatus.

When the apparatus is of the endless chain type the heating walls shut off the furnace quite close to the traveling conveyer. This is accomplished in such a manner, as seen in the illustration, that the gases evolved can enter the collecting chamber directly, which is located above that wall. French Patent No. 616,187. (Kohlenveredlung G. m. b. H.)

TO STOP GASKETS FROM STICKING

The oil and gas industries require the use of gaskets in many places. A large per cent of the uses is with the discs and flanges of gas measurement assemblies, or in gas well pressure control equipment where discs are used. In these instances the gaskets are made of asbestos compositions and are most satisfactory when already cut to fit the flange.

Trouble is frequently encountered when attempting to remove gaskets after they have been in service for several months. The usual practice is to put oil or cup grease on the gasket before placing in the flange. This is satisfactory and prevents the trouble caused by sticking for a while, but in gas lines this practice is not effective after a short while in servce.

One plan that has been tried and given perfect success to prevent sticking of gaskets is to cover both the gasket, flange and disc face with a rust-preventing grease every time the gaskets are installed. This plan absolutely prevents the gaskets from sticking even after long service and in the worst conditions.—H. F. Beardmore, Bartlesville, Okla.

GAS MERCHANDISING

Domestic Home Service

ACCELERATING THE SALE OF GAS APPLIANCES

By Clement White

ALERT dealers are enjoying a steadily increasing sales volume by adhering to methods which give a new and forceful impetus to the sale of gas appliances.

Display is a major sales aid. Display of an up-to-date stock of modern gas appliances offers convincing evidence regarding the beauty and practical utility of the equipment.

The number of new patrons the dealer is able to attract to his showroom is a dominant factor in his success; this is why special attention should be given to arranging the stock to the end that prospects will be encouraged to investigate the variety of modern appliances arranged for their inspection.

One of the important essentials in arranging displays of gas appliances is to group the articles so customers will see the wisdom of increasing their orders.

Interesting the Prospect

As an example, Mrs. Jones entered a sales room for the purpose of buying a gas heater. She had decided to buy this appliance, so the sale was easily made. However, Mrs. Jones' attention was directed to a neat display of gas ranges. She was interested in ranges, because her kitchen was equipped with an obsolete range which wasted her time and spoiled her temper.

Mrs. Jones had felt the need of a new range for several months; but she had failed to take the initiative, seek a show room and investigate the merits of modern ranges. In company with many other housewives, she had endured the shortcomings of her old range, because she didn't realize how many worth-while improvements were embodied in modern ranges.

Her visit to the sales room gave the dealer a favorable opportunity to inform her regarding the superior features of modern ranges. She gave her order for a range before leaving the sales room. The dealer probably would have lost this sales opportunity if Mrs. Jones hadn't been attracted by his display of ranges.

Housewife Eager to Learn

Instances of this nature are of frequent occurrence. That housewives like to discuss modern gas appliances with dealers, for the purpose of finding out just how the equipment will meet their specific needs, goes undisputed. The housewife who is a "live prospect" likes to ask questions about a new range, heater, washing machine or other appliance which interests her, and she is encouraged to seek this helpful information at your sales room, provided you win her attention through attractive stock display.

"I consider attractive stock display one of my most successful sales-building aids," remarked a dealer.

"Arranging a stock of gas appliances so each article shows to best advantage calls for painstaking effort.

"Attractive stock display does more than to catch the attention of prospective customers. It is very effective for giving housewives timely reminders regarding the wisdom of buying new appliances without further delay. Moreover, it encourages prospects to learn new facts about appliances which interest them. It is my experience that systematic stock display can be depended upon for bringing in new prospects, and for encouraging established customers to buy more appliances.

Display Is Cheapest Sales Aid

"The majority of my sales are made after careful investigation on the part of prospective customers. I encourage prospects to become familiar with the special merits of appliances in which they are interested. I find the well informed prospect is the most profitable customer. A sales aid which gives prospects the incentive to acquire pertinent facts regarding modern gas ranges, heaters, etc., etc., is certain to boost volume. I make a point of showing my stock to best advantage, because systematic display is my cheapest and most effective sales aid."

Attractive stock display and systematic canvassing are of maximum value when used in combination. Canvassing campaigns are of special value for acquainting housewives with your facilities for offering real, personal service; this individual service wins the good-will of customers, and boosts sales by focussing their attention upon the capable and economical service offered by modern gas appliances.

The dealer who wishes to give a new impetus to the sale of gas appliances will find it advantageous to give special attention to new sales arguments, which will enable his "sales force" to win orders from prospects who aren't "in a buying humor" when first approached.

Gas Heater Sales Points

Consider modern gas heaters, for instance. They sell to best advantage when their safety, sustained efficiency, economy, dependability, quick room warming capacity and thorough diffusion of warmth are pointed out to prospective customers. Another effective sales argument is the ornamental feature of modern gas heaters. It is well to keep in mind the fact that new sales arguments, which give prospects a comprehensive understanding of the outstanding merits of the appliance you are demonstrating, are of maximum value for boosting volume.

During the progress of a canvassing campaign, you may meet prospects who aren't well informed regarding new developments in gas heating, and who are gratified with the news that they can select a style of gas heater adapted for any decorative scheme or individual preference.

The fact that modern gas heaters which combine beauty of appearance with economical service aren't expensive is a sales argument which wins orders.

Some prospects may not appreciate the modern gas heater's ability to bring warmth and beauty into the home; through demonstration and descriptive sales arguments you can show them how readily they may solve their heating problems through the use of this equipment.

Handling Difficult Prospects

Incidentally, it pays to devote extra attention to difficult prospects when conducting a canvassing campaign; for many difficult prospects are turned into profitable customers through systematic canvassing.

When demonstrating gas appliances in the homes of prospective customers, emphasize the ability of your organization to offer patrons an unsurpassed service. Also direct the attention of prospects to the fact that your entire

list of appliances will meet the exacting standards of performance demanded by busy housewives.

Each article in a stock of modern gas appliances has the necessary qualities to awaken the enthusiasm of prospective customers. Take the gas heated washing machine, and gas heated ironing machine, for example. This practical equipment for the home laundry is ascured of a prompt and enthusiastic reception among housewives, when demonstrated for their benefit.

Washing Machine Pointers

Washday is a prosaic subject, willingly avoided by most persons. However, the distributor of home laundry equipment cannot afford to ignore the potential demand for both washing machines and ironing machines. Extra demonstration effort, directed with the view of showing housewives how easily and cheaply they can wash and iron clothes with this modern equipment, is effective for boosting sales.

It pays to show prospects why your washing machines and ironing machines are outstanding investment opportunities for housewives who do their own laundry work.

The gas heated ironing machine merits special attention, as it fills a long felt need for a practical device which eliminates the long hours of hard work incident to smoothing clothes with obsolete irons.

An important essential in boosting the demand for ironing machines is to show housewives how the equipment eliminates labor and saves their time. Where obsolete sad irons are used, smoothing clothes is a hot, tiresome job. The housewife who is equipped with a gas-heated ironing machine merely connects the rubber hose connection to a gas jet, then "feeds" the clothes through the machine. It is easy to determine that the ironing machine is one of the greatest labor-saving devices for the housewife's use, and when properly demonstrated it is certain to win her approval.

Selling the Appliance

Show the prospect that the machine reduces ironing to its simplest form, and that she "rests at ease" while accomplishing work which formerly was hard, manual labor. Point out the automatic action of the "ironer" and emphasize the fact that it is a safe machine. Show her that the modern ironing machine will enable her to iron those "fluffy clothes" which were so difficult to smooth satisfactorily with obsolete equipment. Show her that the machine is designed so it will iron intricate ruffles and flounces—and that it can be depended upon to do beautiful work even when operated by an amateur.

Practical sales arguments are your best asset when you go after ironing machine prospects. Remember that washday arrives fifty-two times a year, and that the washing and ironing of clothes is a real and vexing problem in many homes. You feature equipment which permits any housewife to modernize her home laundry and aggressive sales methods will accelerate the demand for these practical devices.

An Attractive Display of Gas Heaters

HANDBOOK ON HOT WATER

Pacific Coast Company Compiles Interesting Information

The Portland Gas and Coke Company has recently issued a handbook on hot water supply service.

It is gotten up in a very nice shape and illustrated with pictures and drawings. One page is devoted to a description of hot water; a second to the proper method of connecting a tank heater to a boiler.

A page is devoted to tank heaters—the type, their operation, capacity, advantages, disadvantages and uses.

The automatic push button control for tank heaters is thoroughly illustrated and described.

Storage heaters and instantaneous heaters are well illustrated and written up in detail, as are also the large storage heaters.

Two pages are given over to a write-up and drawings of circulating systems.

The discharge capacity of plumbing fixtures is given; also the flow of water in house service pipes.

An unusual feature of a book of this kind is that a whole page is devoted to pipe data, giving diameter, circumference and transverse areas, both external and internal, as well as complete data on tanks of different sizes and heat losses.

Two pages are devoted to hot water consumption for the average person.

Two pages are devoted to troubles and remedies, as follows: For Water Being Too Hot, Water Not Hot Enough, Hot Water From Cold Water Faucets and Cold Water From Some Hot Water Faucets, Water Hot in Tank but Cool at Faucet, The Gas Turning On and Off too Frequently, Noise or Odor and the Heater Burning When No Water Has Been Drawn.

Rules for designing and installing take up one entire page as also the common faults in design, while the last two pages are devoted to suggestions for specifications with the back cover giving the flow of gas in pipes.

All in all it is one of the most comprehensive books on hot water heating that has come to our notice and the company issuing the same has thereby filled a long-felt want.

Gas Has 5,000 Uses

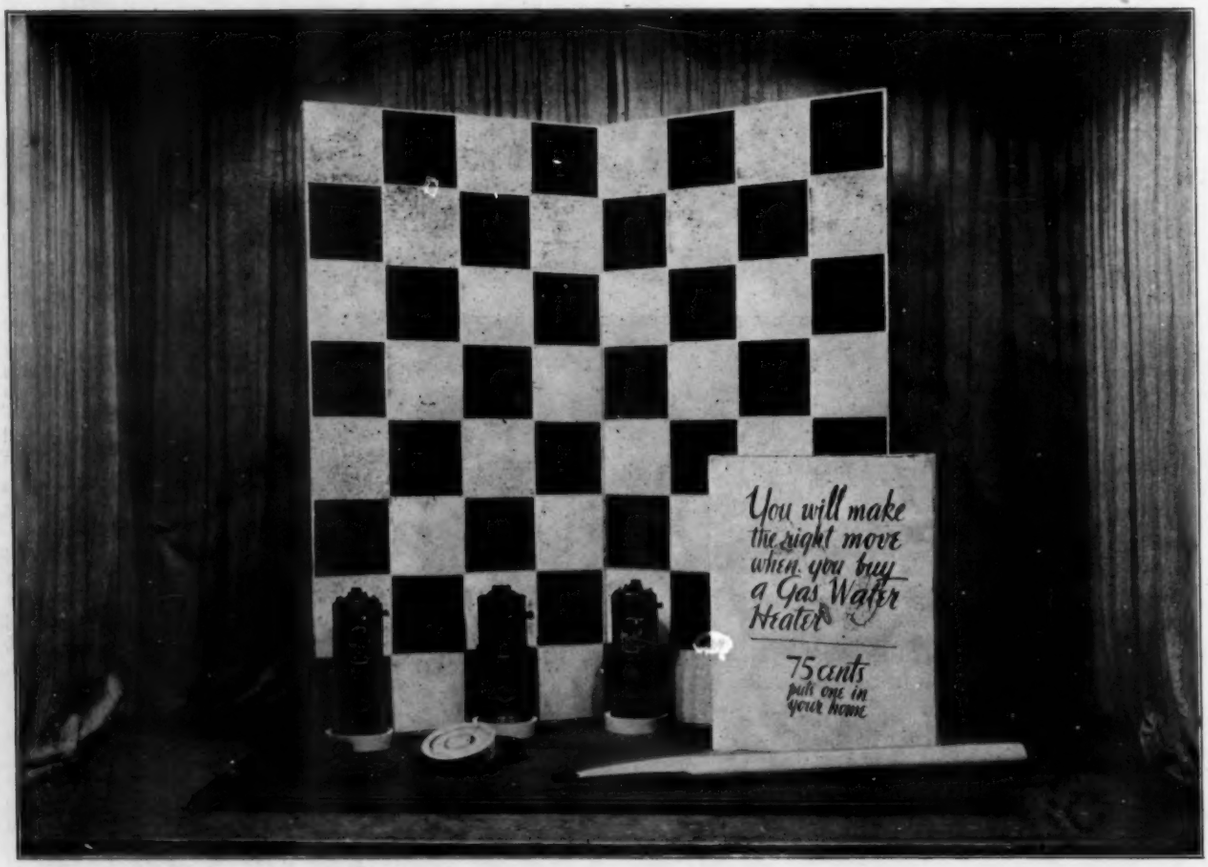
Gas is used in more than 5,000 different ways in industrial plants. About 25 per cent of the total amount of manufactured gas sold is now used by industries. The manufacture of gas utilizes more than 10,000,000 tons of coal and 900,000,000 gallons of oil each year. There are 966 gas utilities in operation.

Realism Attracts Attention

A low cost window display that will attract customers

By Ray Martin

Display Manager, Consolidated Gas Company of New York



WHEN realism is the keynote in a window display advertisement it must be true in every detail.

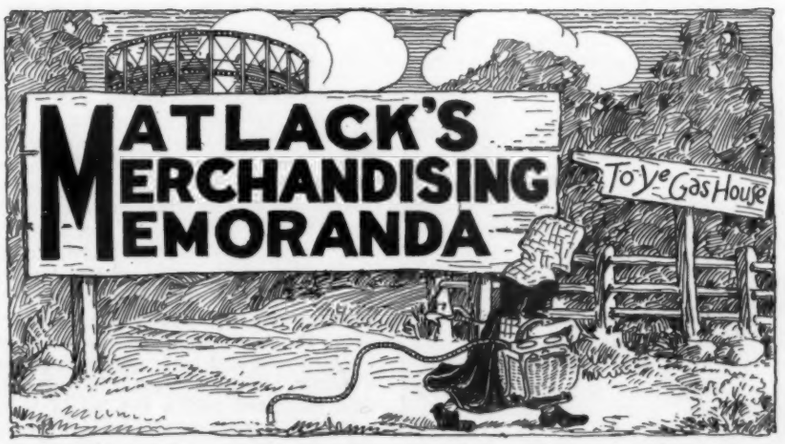
In the case of the display pictured above, the giant pad is made of actual paper. Its depth of 3½ inches is produced by using actual paper strips. The heroic size checks are really the product of the wood turner. The huge pencil is made of wood with a separate core to better represent the lead. Its realism is to be expected because after first being painted it was actually sharpened by hand.

The casual observer might not notice these accurate details, but those more observant will attach considerably more importance to the sales argument embodied in such a display.

The question as to whether this type of display is superior or inferior to the impressionistic display is frequently debated. While the modern trend in both newspaper and window display advertising is toward the impressionistic, the Consolidated Gas Company of New York still produces occasional displays that depend largely on realism to attract attention.

One thing to be remembered is that near realism should be avoided. A poor imitation of an otherwise real cornfield is inferior, by far, to an impressionistic —perhaps exaggerated—representation.

In a word, if still life is to be reproduced in a display it must be realistic to the point of perfection. Otherwise, it should be obviously impressionistic.



A SUGGESTION FOR SALES LETTER CONSTRUCTION

When you build up your direct-by-mail campaign use the formula attention plus Interest Plus desire plus Action in your letters and your results will equal SALES.

Weave these factors that are essential to all sales into your letter with great care and in the sequence as named.

No matter what kind of stationery you use, whether company letter heads and envelopes or the pictorial or double fold letter heads and special envelopes furnished by the appliance manufacturer whose makes you are featuring, be certain that the letter is properly and carefully balanced and written, that "fill-ins" match up and that names are spelled correctly and that the envelopes are correctly addressed.

Any form letter that is written on good stationery, neatly filled in with the prospect's name spelled correctly and properly addressed will attract his attention, and if the opening paragraph is planned to say something about "you" or "your" it is pretty safe to believe that it will arouse his interest. Creating a desire is then our next problem and one that must be well planned and handled. It may take several paragraphs to properly build up this factor desire, and you may find that the best way to do it is to tie-in the merchandise you are exploiting to the habits, home or requirements of the prospect; to lead him to desire through suggestion. Once this is done, once the desire has been created, there is but one step more to be taken—get his name on the dotted line. You may attract a person's attention, you may secure his interest and create in him a desire for your merchandise and yet only have obtained a prospect. It takes action to complete a sale and secure a customer and Action is the last factor that you have to consider in building your sales letter. See to it, then, that the closing line or paragraph is one designed to cause the customer to act, to send a remittance, to fill out and mail a card, to telephone for a representative or respond to your letter.

Here is a sample letter that may illustrate what we have just said:

An abundance of Hot Water.

There is nothing more to be desired than an abundance of hot water.

You can easily have it and without any effort on your part. The secret of always having "hot water at the turn of the spigot" is the use of a——— gas-fired automatic water heater, which is described in this folder. It will supply all the hot water you need "heated on the run."

Heating water by gas is accepted nowadays as the efficient, economical, sanitary and labor saving method.

Our expert, without obligating you in any way, carefully studies your needs and then recommends the heater that will exactly meet your requirements.

An automatic gas-fired water heater is one of the greatest servants you can have. Use the enclosed card today or 'phone us that you are interested.

Sincerely yours,

Sales Manager.

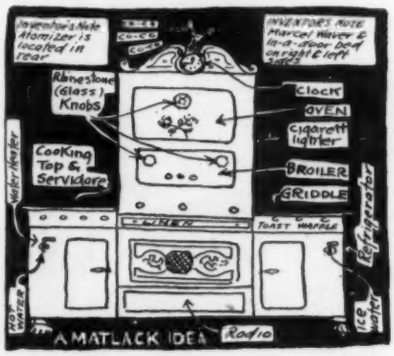
This copy is written for use in connection with a double fold combination letter and descriptive circular. You will note the salutation is in the form of a subject.

We have employed the "subject" to save "fill-in" and thus save time and labor and obviate the chances of incorrect address and misspelled names—too, we do not have to guess whether "R. A. Jones" should be addressed as Dear Sir or Dear Madam.

"BOOMCOMPANIONS"

To the Editor of The Merchandising Dept.,
American Gas Journal,
New York, N. Y.
Dear Sir:

I think you will be interested in a new home appliance which I saw on my last visit to Bunkum, British South Africa. To me it is the last word in efficiency, and while the invention of a native of that frigid clime I am of the opinion that American manufacturers will be glad to learn about such an appliance for it surely will solve the problem of our cliff dwellers. The sketch which I made on the spot will give you a vague idea of just what this appliance looks like. You will note the various time and labor-saving devices embodied everything that Mrs. Cliff Dweller could desire. The marcel waver and in-a-door bed are located on the right and left sides while just to the rear is a specially designed contrivance which has been called an atomizer. It was explained by the inventor that this contrivance was included to enable the home manager to inject her favorite aroma into the atmosphere at the time she was frying onions or cooking corned beef and cabbage, turnips, etc., etc. These units which the inventor has christened "Boomcompanions" may be designed to conform with any style or architecture and may be enameled in bright colors or to imitate chinky-pine, running cedar, cat-tails or any other of the woods that are so much the vogue.



You no doubt can see the possibilities of this appliance and if you are of the opinion that "the trade" would be interested you are welcome to pass on the idea to them.

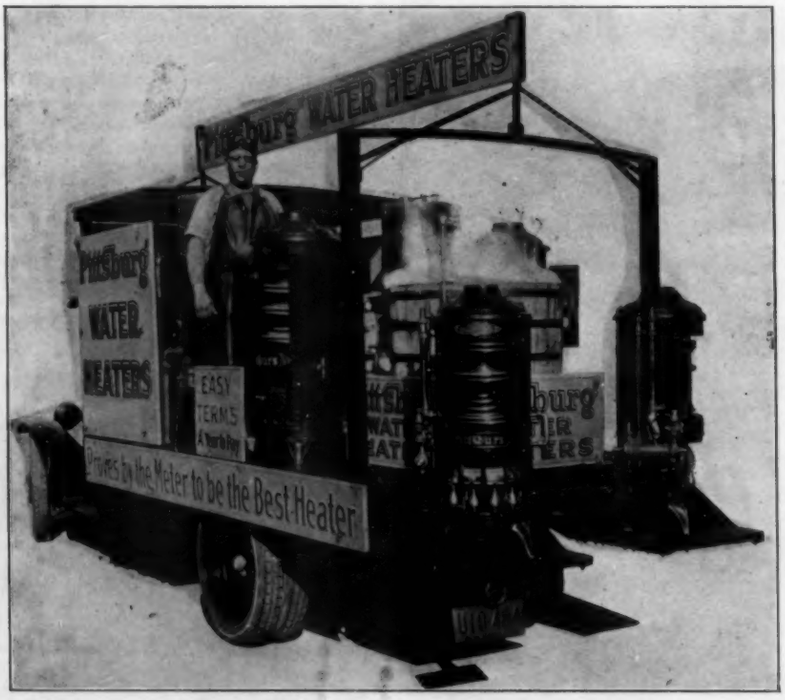
Yours sincerely,
Constant Reader.

On board S. S. Hisnibs,
Mid-ocean, April 30, 1927.

ILLINOIS POWER USES SPECIAL WATER HEATER TRUCK

Last Fall the Southern Illinois group of the Illinois Power and Light Corporation staged a drive on self-action gas water heaters. Special newspaper advertisements played up the heater and offered a special allowance on old heaters. Window displays featured the campaign and as an added attraction The Pittsburg Water Heater loaned the company a special water heater truck which paraded the streets during the sale. This truck, which was accompanied by the gas company's salesmen, contained a huge tub above which a spigot had been suspended and from which by a specially designed pump a continuous stream of water was supplied to the tub at a rate of flow that caused the soapy water in the tub to boil, as shown in the accompanying photograph. The electric calliope, playing the latest tunes, caused the home managers to turn out in great num-

bers and gave the salesmen accompanying the display ample opportunity to explain the value of Hotel Hot Water Service In the Home. The result was that, although late in what is usually considered the water-heater season, the special drive is said to have been highly satisfactory, for hundreds of people for the first time saw a self-action gas water heater, and many sales were made to folks whose homes were visited by the truck.



Hard Riding in Prospect

New methods always have given old J. Consumer a hard run for his money and we think they will be on the job again this year, possibly; yes, we will predict, and cut the possibly, that they will give him a real run this year. Of course there will be a lot of debunking of what some folks call sales ideas. There will have to be for competition will be unusually keen—but don't forget folks pay real money for merchandise "like the Joneses."

Push Toasters

We are of the opinion that it was the People's Gas Stores, Chicago, that started the toast movement in America, at any rate we understand that they sold thousands and thousands of pairs of toasters—"a gas toaster for forty cents or two for thirty-nine." And now we find other gasmen, selling or dispensing toasters, all over the country. The Laclede Gas Light Company devoted a lot of newspaper space to toasters recently and gave over one of the windows in their main store to the display of them while just the across the river the Illinois Power and Light Corporation gave a toaster to all customers who called at their office and paid a gas bill of three dollars and fifty cents or over. To us this seems like a mighty good move—get folks to making toast at home—keep them sold on the wonders of the gas range and home cooking—it is a great way to keep up that send-out per meter.

What, Where, When

The Home Service department is often called upon to show what results are attained from demonstrations, especially when they are conducted outside of the company's sales room or kitchen. Also, the question of cost of demonstrations is often asked as well as how many people were in attendance, what was served, etc.

ILLINOIS POWER AND LIGHT CORPORATION
Southern Illinois Group

REPORT OF DEMONSTRATION

NAME OF ORGANIZATION_____

DATE_____ PLACE_____

NUMBER IN ATTENDANCE - (MEN) _____

(WOMEN)_____

(CHILDREN)_____

KIND OF DEMONSTRATION_____

HOW SERVED_____

COMMENTS_____

NEWSPAPER PUBLICITY_____

TOTAL COST OF DEMONSTRATION_____

NAME OF DEMONSTRATORS_____

Two months after a demonstration this information is rather hard to secure and in order to keep an accurate check on the "What, Where and When" of demonstrations a sales manager of our acquaintance devised the form shown herewith.

This form was made on standard stock, letter size and was made up on a multigraph machine and punched for file in a three-ring binder.

stet . . (of all things) . . by w. h. Emm

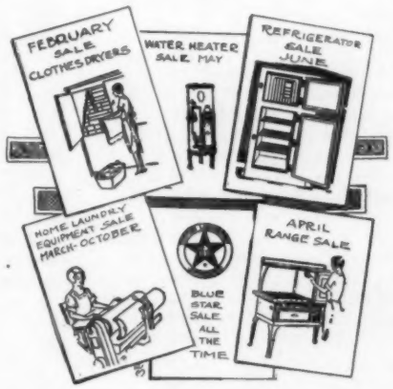
GOOFER feathers may be so soft that they are fit for the king's pillow, but soft selling is not in order today. Folks don't want to feel that price makes a great deal of difference and, as one gas man has said, "Too many gas companies are cutting prices and shooting over the heads of their customers. Advertising and selling on the basis that the big-boys have it, makes them buy—not how cheap but how popular, how much in demand." That is true of other than gas burning merchandise; we wonder if it is not true of it as well.

If some more gas men would take a little more of their own medicine what a lot of Blue Star Homes we would have. If you do not wholly believe in your groceries you're not a good groceryman.

If there's a wet plank in the platform we'll sell 'em a gas dryer. If there's a dry plank we'll sell 'em Hotel Hot Water service. So let's don't worry about that and keep on selling merchandise at fair prices.

The Mountain States Power Co., Tacoma, Washington, and the St. Louis County Gas Co., Webster Groves, Mo., are to be congratulated on their booklets on house heating—they not only tell what may be done but illustrate by pictures and words what has been done in the way of making the average home a Blue Star Home. The St. Louis County booklet as well as the Byllesby booklet, "What Price Comfort?—In Your Home," are worthy of a place in the files of all gas men who are in the house heating game.

Phoo—on presidential year pessimism; prime up! Sharpen your pencil, get all the pre-war stuff,—vintage of the holiday hang-over,—out of your system. Let's do a little selling, using caution and common sense. Don't be afraid of new merchandise and don't be over-sold, in other words, over-stocked. Build your sales calendar.—Don't campaign sell.—Sell on a pre-arranged plan.—Here's a suggest calendar.


FEBRUARY SALE CLOTHES DRYERS
WATER HEATER SALE MAY
REFRIGERATOR SALE JUNE
HOME LAUNDRY EQUIPMENT SALE MARCH-OCTOBER
BLUE STAR SALE ALL THE TIME
APRIL RANGE SALE

They're going to tone up gas appliances, so you may as well get ready for 'em. "Beautiful Baby Blue door frames, cream panels, ebony main top and nude legs," or something like that, will appear as a partial description of "..... triumphant of 1928."

Style will play a big part with the progressive appliance manufacturer. He will build his merchandise to tone into silent, sanitary, sightly kitchens and basements where those men who pose for underwear advertisements may repose in a clean, cheerful atmosphere, while their regular clothes are being washed, ironed and dried by gas. Honestly, fellows, we have to get some style into our merchandise and merchandising if we are to keep and build up that domestic load. Style in all things is the big selling factor; mention it to ma—she knows.

Well, they're here, those colored gas ranges, to match the canary and old rose wainscoting in the kitchen—there's another special selling feature—let's have more new merchandise—we have to maintain that 70 per cent domestic load and top it.

Donald Mackie, president P. U. A. A., said: "Now is the time for advertising to prove its worth; for the advertising department to come to bat in a situation that makes this an advertising year." We read further: "It seems to me, therefore, that your association will do well to devote considerable attention to improvement of copy in order to do the job set for it, and to getting fullest value from advertising expenditures." We suspect Mr. Mackie would recommend that the advertising be written and laid out by men who have made a special study of the subject and who have had some actual experience in some of the branches of advertisement making—we second the motion!

So many, many sales plans use remote control these days of *standazation* that it is not strange that here and there we hear of flops. It is strange that now and then one hears of outstanding successes. Of course, the latter may be devised to fit the particular situation—who knows?

We are sold on the two-part, three-part or any other type of gas rate that will permit us to sell hotel hot water service into the home—if such a rate is worked out and folks can be sold the idea of real hot water service we will soon have every home equipped with not only a self-action water heater and gas range, but all the other essential appliances that go to make up a Blue-Star Home. Rate makers please note!

You should not expect to get "your money's worth" from advertising that is written by the office boy or the girl who was "so good" in handling the mail. We once knew a lady who painted, gaily, everything in her home, from the hat-rack to the coal hod, but we would hardly call her an artist.

FINANCIAL NEWS

DIVIDENDS DECLARED

Name of Company	Rate	When Payable
American Gas Co. (N. J.) (quar.)	2%	Jan. 13
American Gas & Electric, common (quar.)	$0.25	Jan. 3
American Gas & El., common (1-50 share com. stock)	....	Jan. 3
American Gas & El., preferred (quar.)	1½%	Feb. 1
Arkansas Natural Gas (quar.)	$0.12	Jan. 2
Associated Gas & Electric, Class A (quar.)	$0.50	Feb. 1
Associated Gas & Electric, Class A (extra)	$0.25	Feb. 1
Brooklyn Borough Gas, common (quar.)	$1.50	Jan. 10
Brooklyn Borough Gas, preferred (quar.)	$0.81¼	Jan. 3
Carolina Power & Light, $7 preferred (quar.)	$1.75	Jan. 3
Carolina Power & Light, $6 preferred (quar.)	$1.50	Jan. 3
Cincinnati Gas & Electric (quar.)	1¼%	Jan. 3
Cities Service Power & Light, $6 preferred (monthly)	$0.50	Dec. 15
Cities Service Power & Light, 7% preferred (monthly)	$0.58 1/3	Dec. 15
Con. Gas, E., L. & Pr. (Balt.), 5½% pref. (quar.) (No. 1)	1⅜%	Jan. 3
Continental Gas & Electric Corp., common (quar.)	$1.10	Jan. 3
Prior preference (quar.)	1¾%	Jan. 3
Participating preferred (quar.)	1½%	Jan. 3
Participating preferred (extra)	½%	Jan. 3
6% preferred (quar.)	1½%	Jan. 3
Empire Gas & Fuel, 7% preferred (monthly)	$0.58 1/3	Jan. 2
Empire Gas & Fuel, 8% preferred (monthly)	$0.66 2/3	Jan. 2
Florida Power & Light, preferred (quar.)	1¾%	Jan. 3
Gas & Electric Securities, common (monthly)	$0.50	Jan. 3
Common (payable in common stock)	$0.75	Jan. 3
Preferred (monthly)	$0.58 1/3	Jan. 3
Hartford City Gas-Light, common (quar.)	$0.50	Dec. 31
Common (extra)	$0.50	Dec. 31
Preferred (quar.)	$0.50	Dec. 31
Common (extra)	$0.50	Dec. 31
Preferred (quar.)	$0.50	Dec. 31
Houston Gas & Fuel, preferred (quar.)	1¾%	Jan. 1
Indiana Service Corp., 7% preferred (quar.)	1¾%	Dec. 31
6% preferred (quar.)	1½%	Dec. 31
Kansas Gas & Electric Co., preferred (quar.)	1¾%	Jan. 3
Kings County Lighting, preferred (quar.)	1¾%	Jan. 2
Louisville Gas & Electric (Ky.), 7% preferred (quar.)	1¾%	Jan. 15
6% preferred (quar.)	1½%	Jan. 15
Middle West Utilities, preferred (quar.)	1¾%	Jan. 16
$6 preferred (quar.)	$1.50	Jan. 16
Midland Utilities, 7% prior lien stock (quar.)	1¾%	Jan. 6
6% prior lien stock (quar.)	1½%	Jan. 6
7% Class A (quar.)	1¾%	Jan. 6
6% Class A, preferred (quar.)	1½%	Jan. 6
Missouri Gas & Electric Service, prior lien (quar.)	$1.75	Jan. 16
New England Gas & Electric, $5½ pref. (quar.)	$1.37½	Jan. 1
New England Gas & Electric $6 pref. (quar.)	$1.50	Jan. 1
New Haven Gas Light (quar.)	$0. 62½	Dec. 31
Pacific Gas & Electric, common (quar.)	$0.50	Jan. 16
Peoples Gas, Light & Coke (quar.)	2%	Jan. 17
Providence Gas Co. (quar.)	$1.00	Jan. 2
Southeastern Power & Light, common (quar.)	$0.25	Jan. 20
$7 preferred (quarter.)	$1.75	Jan. 2
$6 preferred (quar.)	$1.50	Jan. 2
Participating preferred (quar.)	$1.00	Jan. 2
Southwest Gas & Electric, 8% preferred (quar.)	2%	Jan. 2
7% preferred (quar.)	1¾%	Jan. 2
Springfield (Mo.) Gas & Electric preferred A (quar.)	$1.75	Jan. 3
Standard Gas & Electric, common (quar.)	$0.87½	Jan. 23
7% prior preference (quar.)	1¾%	Jan. 23
Standard Gas Light, N. Y., common	2%	Dec. 31
Standard Gas Light, N. Y., preferred	3%	Dec. 31
United Gas & Electric Co. (N. J.), common	$1.25	Dec. 31
United Gas & Electric Co. (N. J.), preferred	2½%	Jan. 15
United Gas Improvement (quar.)	$1.00	Jan. 14
United Light & Power, common, A & B (quar.)	$0.12	Feb. 1
United Light & Power, preferred A (quar.)	$1.62	Jan. 1
United Light & Power, preferred B (quar.)	$1.00	Jan. 1
Utah Gas & Coke, preferred & participating, pref. (quar.)	$1.75	Jan. 3
West Ohio Gas, Class A, preferred (quar.)	1¾%	Dec. 31

Gas Companies' Earnings

Cities Service Co. for the 12 months ended November 30, 1927, reported gross earnings of $32,925,032 and net to common stock and reserves of $22,469,547, as compared with gross of $24,465,509 and net of $14,769,217 for 12 months preceding.

Houston Gulf Gas Co. reports for year ended September 30, 1927, gross earnings of $3,479,695 and net of $1,485,876 left for dividends, amortization, depletion, depreciation, etc.

Los Angeles Gas & Electric Corp. for 12 months ended October 31, 1927, gross earnings of $21,135,054 and balance for surplus and dividends of $4,591,414, as against gross of $17,132,077 and balance of $2,662,392 for preceding year.

Louisville Gas & Electric Co. (Del.) reports for year ended September 30, 1927, gross earnings of $8,747,076 and net before provisions for retirements of $4,516,107, as against gross of $8,552,860 and net of $4,340,064 in preceding year.

Oklahoma Gas & Electric Co. for 12 months ended October 31, 1927, shows gross earnings of $13,498,183 and net before provision for retirements of $5,253,259, as against gross of $11,088,718 and net of $3,975,153 for 12 months preceding.

Portland Gas & Coke Co. for period ended October 31, reports gross of $4,486,846 and balance before depreciation of $908,971, as against gross of $4,133,577 and net of $846,108 for year before.

Standard Gas & Electric System for 12 months ended October 31 shows gross of $146,030,213 and net gross of $64,316,551, as against gross of $139,911,759 and net gross of $60,055,787 in year preceding.

Southwestern Gas & Electric Co. reports gross of $5,621,713 and net after taxes, interest and retirement provisements of $1,182,378 for year ended September 30, 1927.

NEW CAPITAL FLOTATIONS OF GAS COMPANIES DURING DECEMBER, 1927

Company and Issue	Purpose of Issue	Price	% to Yield About	Amount
Central Gas & Electric Co.				
3 year 5½% gold notes, due Dec. 1, 1930	Acqui. & Refunding	*99¼	5.75	$3,500,000
5½% first lien collateral trust sinking fund gold bonds, due Dec. 1, 1946	Acqui. & Refunding	*98½	5.87½	7,000,000
Central Illinois Public Service Co.				
1st mtge. 4½% gold bonds, series F, due Dec. 1, 1967	Ref. & Improvements	*94¾	4.80	29,000,000
4½% serial gold notes, due each Jan. 1, 1929-1931, $1,400,000	Ref. & Improvements	Notes were offered at prices to yield from 4.25% to 4.75%, according to maturities		4,200,000
Central Public Service Corp.				
6% collateral trust gold bonds, series A, due July 1, 1940	Acqui. & Corp. purposes	*97½	6.30	4,500,000
Central States Power & Light Corp.				
1st mtge. and 1st lien gold bonds, 5½% series, due 1953	Ref., Acqui. & other Corporate purposes	*98½	5.60	8,500,000
Connecticut Light & Power Co.				
5½% cumulative preferred stock	Additions & Imp.	100 flat	5.50	6,500,000
Florida Power & Light Co.				
1st mtge. gold bonds, 5% series	Extensions & Corp. pur.	*97½	5.15	10,000,000
Hamilton Gas Co.				
1st mtge. 6½% sinking fund gold bonds, series A, due 1937	Acquisitions	*100	6.50	2,500,000
5 year 6½% sinking fund deb. gold notes, due 1932	Acquisitions	*99	6.70	1,000,000
Iowa Public Service Co.				
$6.50 1st pref. cumulative stock	Acquisitions, extensions and improvements	100	6.50	†4,000
Louisiana Power & Light Co.				
1st mtge. gold bonds, 5% series, due 1957	Corporate purposes	*97¾	5.11	8,000,000
North American Light & Power Co.				
30 year sinking fund gold debentures	Corporate purposes	*96	5.75	5,000,000
Northern Pennsylvania Power Co.				
$6 cumulative preferred stock	Corporate purposes	‡99	6.06	†1,000
New Bedford Gas & Edison Light Co.				
5% 1st mtge. bonds, due 1938	Corporate purposes	*105½	5.00	600,000
5 year 5% coupon notes, due 1933, redeemable within 30 days notice during 1928, 1929, 1930, 1931, 1932, at various maturities	Corporate purposes	*102	...	762,000
Southern California Gas Corp.				
5% collateral trust gold bonds, due 1937	Corporate purposes	*95½	5.60	12,500,000
Southern Cities Utilities Co.				
$6 prior preferred stock	Corporate purposes	‡89.50	6.70	block of shares
Southern Indiana Utilities Corp (Ind.)				
1st mtge. 6% gold notes (closed mtge.), due Oct. 15, 1930	Corporate purposes	*98.00	6.75	150,000
United Public Service Co.				
$7 div. series pref. stock (no par value), each 2 shares of pref. stock will carry 1 share of com. stock	Acqui. & Improvements	‡100	...	†10,000
Wisconsin Hydro-Electric Co.				
6% cumulative preferred stock	Acq. & Corp. purposes	‡95	6.32	800,000

* Plus interest. ‡ Plus dividend. † Shares.

"A Brief History of the Natural Gas Industry"

By H. C. ZWETSCH
1927 Edition
Copy sent upon request

Zwetsch, Heinzelmann & Co.
Inc.

Specialists in Natural Gas Securities

57 William Street **New York**

INDUSTRIAL GAS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

"MUCH IN LITTLE"

By Theodore B. J. Merkt, M. E., Industrial Engineer, The Brooklyn Union Gas Co.

IN this day of mass production it is comparatively easy to think of the selling of products in large volumes. So, too, the sales of large units always command much attention.

During the past few years many industries have shown an intense interest in the sale of their products to every possible user. In addition they have endeavored to adapt these products to various uses in order to standardize their manufacturing methods. Such procedure has added more consumers of these products and broadened the field for their use. Has the gas industry the opportunities for similar action? It most assuredly has.

A discussion of the sale of small industrial gas appliances must necessarily be qualified as to its scope. It is proposed to view this field as embracing small appliances, special equipment and burners suitable for flexible use, each of which does not consume more than 300 M cubic feet of gas annually. Such equipment, it appears, is used largely by industries such as metal, textile, wood, paper, chemical, glass and leather manufactures.

Relation of Load to Appliance Cost

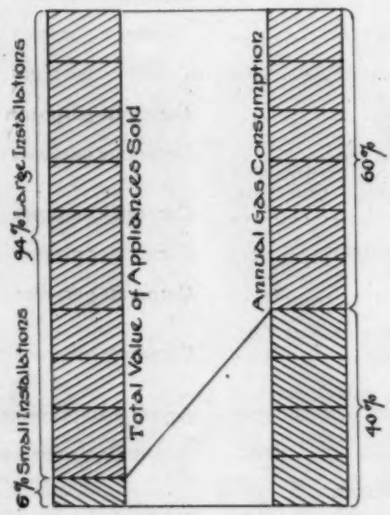
The sale of small equipment is of value to gas companies, to industrial gas salesmen and to the purchasers. An example of the quantities involved in such sales with reference to gas consumption as well as to appliance price is interesting. The record of the activities of several salesmen operating in the fields mentioned above shows that six per cent of their total sales in appliance selling price figures were of small industrial gas appliances. The annual gas consumption of such sales as compared to total consumption gained by all industrial sales amounted to forty per cent.

Industrial gas salesmen throughout the country are paid for their activities according to various systems of compensation based upon the main consideration of how best to obtain new gas consumption as well as to retaining existing gas consumption. To draw conclusions from the figures presented above from one locality would surely provoke a prolonged debate regarding compensation systems for salesmen. Let the industrial gas department executive obtain his own data and interpret it according to conditions peculiar to his problems.

Small Sales Are Important

With relation to the effect of small appliance sales on the total gas sales derived from all industrial appliance sales the above data is indeed surprising. It proves that in one locality small sales are decidedly important and should receive the attention commanded by such large gas use. It may be that in other communities a similar trend toward large gas consumption by small appliances is general. The large appliance when sold always demands respect, but in view of gas use it may be humbled by the small appliance.

The gas company executive who does not



Relation of Appliance Selling Price and Load

know conditions such as brought out above in his own locality does not know the demands and uses for his product.

Customers who purchase small appliances which give satisfaction readily appreciate the many virtues of gas when considering larger size equipment. A satisfied user cannot easily be changed to another fuel even though he be swamped with the advertising and publicity of a competing fuel. Small appliances do their silent advertising for other gas uses.

Manifold Uses for Small Appliances

The small industrial gas appliances which are being considered cover many uses. Soldering iron furnaces, glue pot heaters, shoe burnishing stoves and pressing irons are among those which may be classed as readily movable stock, depending upon the locality. These appliances are also possible of additional uses. The soldering iron furances may be used for the hardening and tempering of small tools. Glue heaters are used for heating chemicals, waxes and oils.

Other small appliances which do not find as ready a sale as the above in many localities are tailor and laundry stoves, blow torches and atmospheric gas torches used in singeing and bending operations. Blow torches, which necessarily require air blast for their operation, are used in many different ways. They braze, melt metals, harden and temper small tools and are particularly useful where a flexible gas appliance is desired to supply concentrated heating.

Atmospheric gas torches patterned after the original Bunsen burner are also capable of filling many requirements. In the wood and reed industries they are readily used to heat the materials in order to facilitate bending operations, while a quick move of the torch over rattan and willow furniture singes the fine hairy fibres which protrude from the finished article, giving it a good appearance.

Uses for Special Burners

The special burners and furnaces, which may be classed in the field of small appliances, fill a multitude of activities. The processing of fabrics such as leather, paper, cardboard and textiles demand in large measure the application of specially designed equipment. Much of this work requires heat to be applied in a closely confined space in parts such as rolls, dies and embossing plates. The pleating of fabrics is more efficient when accomplished with heat, due to the fact that impressions hold their shape for longer periods. In the heating of chemicals, glass and plastics, it is also important that properly designed burners are used, suitable for the particular application.

In considering the sale of special burners and furnaces, the industrial gas salesman must have a knowledge of the proper design of both atmospheric and blast burners. It is not intended to present herewith formulae or data concerning the design and performance of such equipment, but this subject demands some passing consideration. Two instances showing the value of proper design of gas burners suitable for heating a cylinder, the burners to be placed inside

of the cylinder, are examples proving the advisability of a good working knowledge of the utilization of gas.

A Typical Case

Some years ago a chemical manufacturer wished to heat a cast iron cylinder used for the purpose of drying a chemical sludge which flowed over the outside of the cylinder. Supposedly expert gas knowledge was applied, but for two years the process was wholly inefficient. Finally the item of an enlarged manifold which carried the mixture of blast air and gas was found to be the troublesome factor. This manifold having a small cross sectional area did not permit the obtaining of high burner pressures which are quite necessary when gas is to be burned in confined spaces. When the mathematics of the situation was studied and a new burner cast for the purpose, the results were highly satisfactory.

Gas Torches Used in Glass Blowing

In another instance the importance of flue gas escape in heating operations in confined spaces was demonstrated when a manufacturer wished to convert a cylinder designed for steam heating. It was necessary to install the gas burner through the hollow shaft of the cylinder. At first the heating operation was very discouraging until the manufacturer was persuaded to drill holes in the ends of the cylinder to allow for the proper escape of flue products.

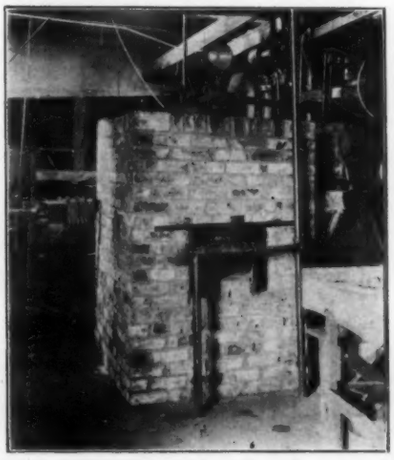
In confined space heating, such as the above, blast burners are more efficient than atmospheric burners due to the sweeping action of the more powerful flames obtained. Properly designed atmospheric burners, fed by mixing tubes which are of the most efficient design, will in many cases match the results of blast burners.

In order to achieve such results, venturi throat mixing tubes with smooth surface must be used. The Bureau of Standards has done much to show the efficiency of such mixing tubes, but a realization of their value by industrial gas engineers will open up many applications which have hitherto belonged to the blast burner. The modern practice of supplying gas to consumers at pressures higher than those formerly used should also enlarge the field for atmospheric burners as when supplied with higher pressure gas, more primary air can be entrained with this gas, the resultant combustion being more nearly like that of the blast burner.

The industrial gas salesman who enters the field of special furnace design and manufacture must have a thorough knowledge of all of the elements involved. In many instances his inability to have control over all of the steps necessary in the manufacture of such furnces has led to failure of the application. The question of whether to carry out such work or let a furnace manufacturer do it is a highly debatable one. Here again the solution lies in whether the knowledge of gas utilization and the facilities of manufacture are possessed by those to whom the problem is entrusted for its final solution.

Discussion of Selling Factors

There are many methods suggested and in use for the selling of industrial gas appliances. The peculiar characteristics of each locality as well as the industrial gas salesman available are two of the deciding factors in selling methods. Small industrial gas appliance sales might be segregated among specialists or sold in general by the particular salesman operating in the territory. When specialists are devoted to such sales there is apt to arise a feeling of disappointment with results as compared to those of other salesmen who are selling high value appliances. This disappointment on the part of the salesman is particularly discouraging in certain localities whether he must cover much territory to see his small appliance prospects. On the other hand, it is not too wise to allow all of this small appliance selling to be done by every salesman unless they are all equipped with the knowledge and experience necessary for the application of gas heat to special problems.



Chemical Autoclave Heated by Atmospheric Gas Burner

The industrial gas department executive of today is confronted with the problem of obtaining new business as well as that of holding the old customers. The competition offered by other fuels makes it imperative that his sales engineers must be acquainted with the ever increasing number of applications for gas as well as the urge to put gas to work in all heating operations. No industry can afford to slight its poorest customer. The growth in numbers of such customers as well as their growth in size is a deciding factor in the economic progress of every community.

Let us have big business, large appliances and huge consumptions, but let us not forget the small application and its value to the gas company, to the salesman, to the manufacturing customer and to the community as well.

An Unique Cook Book

"Ovencraft" is the title of a new cook book which is being presented gratis by the Home Service Division of Consolidated Gas Company of New York and affiliated gas companies.

The author, Ina Padgett, Instructor in Household Arts, Columbia University, has collected together in "Ovencraft" some 200 tested recipes and menus for complete oven-cooked meals.

This book of some fifty pages is attractively printed and is bound in limp, non-spottable cloth.

An Exhibit of Distinction

Gas Display at the Power Show

The Sixth National Exhibition of Power and Mechanical Engineering at Grand Central Palace awarded first honors to the combined exhibit of The Brooklyn Borough Gas Company, The Brooklyn Union Gas Company, The Consolidated Gas Company of New York, The Kings County Lighting Company and The New York and Richmond Gas Company.

All who were privileged to view this meritorious effort must have been impressed with the fact that the gas industry is a powerful and useful agent in the betterment of any and all industrial operations requiring the use of heat, regardless of its application. Further, it can be stated without qualification that the result of the display will be to lighten and facilitate any future efforts to sell industrial gas in the New York metropolitan area and, to some extent, in other places as well.

The exhibit received a tremendous public response, being well filled for the entire duration of the show—from December 5th to the 10th inclusive. Practically every appliance on display was connected and in operation.

The dozen or so oil paintings of ample size which formed the background for this exhibit depicted in a striking and artistic manner the various industrial applications of gas. These pictures are worthy of careful preservation for future display purposes at the coming A. G. A. Convention in Atlantic City.

The entire exhibit was designed and executed by the display department of the Consolidated Gas Company. A committee formed from the utilization and industrial departments of the several exhibiting companies receives credit for the choice of appliances and perfection of their installation.

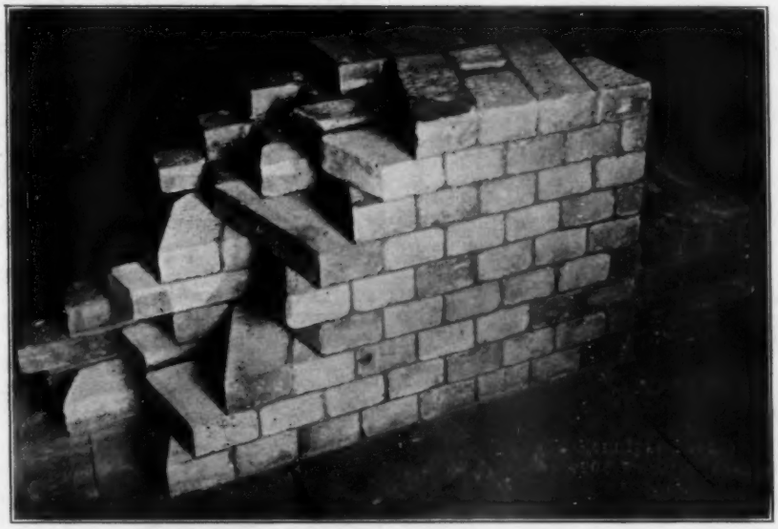
Equipment News

New Firebrick

One of the most difficult problems of fire brick construction, in the opinion of a great many engineers, is the matter of making brick stay put under the stress and strain of actual working conditions. There is always the tendency for walls to loosen up and joints to open, resulting in heat losses, slag penetration and eventual disintegration. This problem of a stronger wall is said to have been solved by the development of Biasbrix, a unique shaped refractory. As the name implies, Biasbrix are laid up on the bias, one brick overlapping and tying together three other Biasbrix in a natural, self-locking construction which gives exceptionally tight joints and a wall of great strength. Owing to this peculiar construction and interlocking feature, walls laid of Biasbrix do not loosen up, joints remain tight and heat losses and slag penetration are reduced to the minimum.

Although different in shape, Biasbrix lay up as readily as the ordinary straight brick in any thickness of wall from 4½ to 27 inches or more, and are equally well suited for hollow wall construction, where a strong bond is of paramount importance.

Biasbrix is an exclusive product of the General Refractories Company, Philadelphia. Although radically different in shape from the conventional fire brick, Biasbrix are available as regular stock.



How Biasbrix Are Laid

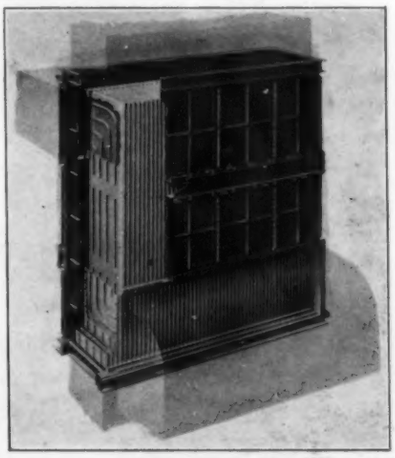
Recent Changes in the Design of C-E Air Preheaters

The following briefly outlines the recent changes made in the design of the C-E plate type Air Preheater:

Access doors are provided in the heater casing which permit blowing the entire surface of the gas passages with steam or air lances. Wherever possible, two such doors are provided in each heater located approximately one-quarter of the element length from each end of the element so that the entire heating surface can be blown. Opposite these doors the spacer bars in the gas passages are cut away to form a lane through which a lance may be inserted. These doors can be readily opened and are small enough so that the heaters can be cleaned while the unit is in operation.

In order to eliminate any leakage from the air side to the gas side of the preheater, the elements are welded to the casing by means of a sealing strip which also holds the elements in place and permits expansion of the elements relative to the casing. This construction also greatly reduces the amount of erection work necessary as there are no bolted joints to be lined up.

Although a number of arrangements are possible with respect to air flow through the heater, it has been found that what is known as the "S" flow design results in the most effective transfer of heat from gas to air. In this design the air inlet and air outlet are located on opposite sides of the heater, and the baffles are so arranged that all lanes of air travel are of approximately uniform length, which assures an even distribution of air in all parts of the heater.



C-E Air Preheater

A New Small Buckeye Service Ditcher

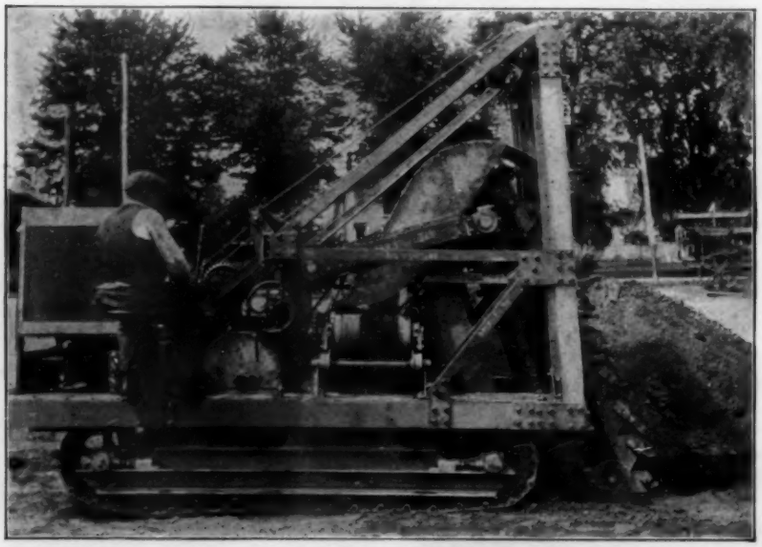
This newest Buckeye is a little, lightweight ditcher, exceptionally flexible in performance, and has many distinctive features which particularly adapt it to service line excavation and for operation in restricted quarters where big excavators are unsuitable.

This unit, Model 150, is described as follows: Cutting widths, 16, 18, 20, 22, 24 and 26 inches; cutting depths, 0 to 4, 6 and 8 feet. Overall dimensions: Width, 6 feet 6 inches; height (with boom raised for travel), 10 feet; length set for 8 foot cut and boom raised), 21 feet 8 inches; length (with boom at maximum digging depth), 18 feet; front of machine to rear of Alligator wheels, 12 feet; approximate weight, 18,000 lbs.; 98 per cent steel construction, excluding power unit; one-man operation, all control levers being within his easy reach.

It is mounted on two full-length Alligator (crawler type traction) wheels, with electric steel treads, heat-treated. Each wheel is 13 inches wide by 8 feet 4⅜ inches center to center of end shafts. These wheels are equipped with double-life drive sprockets, so designed that any certain tooth engages the tread at each alternate revolution only. Treads have smooth contact surface, but can be fitted with mud lugs.

Steering is by two twin disc friction clutches, each equipped with a band brake that automatically sets when clutch is released. The result is easy control and the machine may be turned completely around in its own length or make the slightest deviation in the line of trench.

Buckets are one-piece electric cast steel, annealed and self-cleaning.



Buckeye Service Ditcher

A safety sprocket is provided at the end of the excavator shaft to avoid severe breakage in case an overload obstruction is encountered. This sprocket releases upon meeting such an obstruction, but automatically returns immediately to its normal working position.

Conveyor is reversible and quickly shifted and driven from both ends by endless steel chains. It is kept centered by simple guide clips. Of the curved cradle supported type, it is permanently mounted low. Shifting is by power, less than 30 seconds being required to change delivery position. Shifting operations are made without stopping the machine, and the conveyor can be run while the bucket line is inactive. The belt has two working speeds, it being possible to change instantly from one to the other.

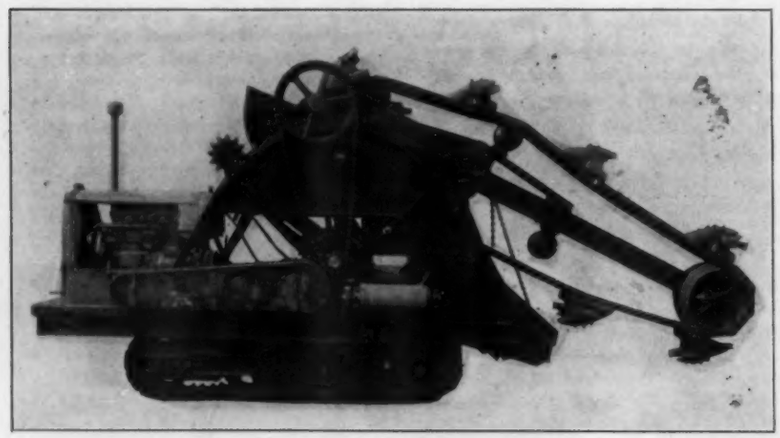
Standard cutting speeds are 12.8 inches, 18.1 inches, 35.7 inches and 66.4 inches per minute. Other gears can be furnished to provide four higher or lower speeds.

Details will be sent upon application to Buckeye Traction Ditcher Co., Findlay, Ohio.

New Public Service & Water Line Trencher

Austin Machinery Corporation, of Muskegon, Michigan, announces the completion of a small type trench machine. This will supply the needs of contractors engaged in digging shallow sewers and laterals—gas, water, and pipe line work as well as electric conduit trench. This machine will be known as their Model 100 and is the result of Austin accumulated experience in the design and manufacture of larger trench exacavating units.

First showing will be at the Good Roads Show, in Cleveland, January 9 to 13, inclusive. The machine is now in production and will be available after January 1st.



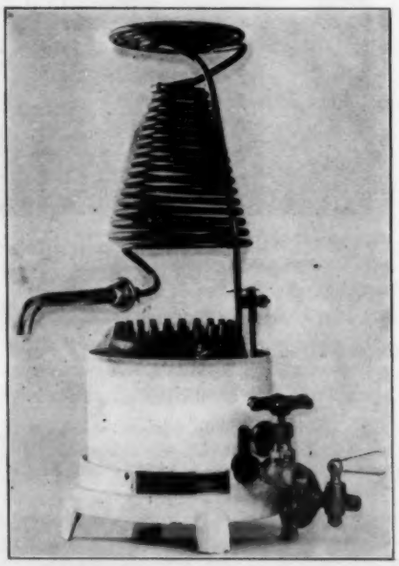
Austin Small Trench Machine

Torrent Water Heater

This gas water heater, which operates on the instantaneous principle, permits of temperature regulation by means of a small valve on the side from lukewarm up to the boiling point within ten seconds. In addition, it is claimed, the flow of water will be in sufficient volume.

The heater burns forty cubic feet of gas per hour and works on the novel principle of a pressure snap cock which, at the time the water is turned on, releases the gas flow for ignition at the burner. The pilot is adjustable.

All parts in contact with water are copper or brass and all joints are brazed to insure permanent connections. The burner has raised drilled ports and a throat so designed as to supply the proper amount of air to the burner under varying gas pressures.



Torrentheater with Jacket Removed

The finish is vitreous porcelain enamel in gray, blue and white. The heater is eight inches in diameter and eighteen inches high.

Further details may be obtained from Torrent Products of America, Inc., Providence, R. I.

Taken from Previous Issues of the American Gas Journal

TEN YEARS AGO

The Laclede Gas Light Company has given their employees who have been in the service of the company for three or more months an extra week's salary as a Christmas present.

The Lone Star Gas Company has purchased the gas as produced in the Walters gas field, in Cotton County, from John C. Keyes and his associates, and is now building a 12-inch line from Petrolia, Tex., to the gas wells, a distance of about 32 miles. When this connection is made the gas will be conveyed to Dallas and Fort Worth.

Charles Hubbard Johnson, eighty-nine years of age, completed sixty-five years of service with the Boston Consolidated Gas Company recently. He was born in Boston, and now finds himself not only the oldest living employee of the company, but also the only one living who was connected with it when he began his career.

Beginning last week the Binghamton Light, Heat & Power Company employed girls to read meters and deliver bills. It has been found advisable to do this on account of the general labor condition, and it is in line with the policy adopted about six months ago of employing girls in all branches of the work where it is feasible to do so, thereby releasing as many men as possible for Federal service.

Charles C. Dawes of Chicago, son of Rufus C. Dawes, head of the gas companies bearing his name, is now en route to France for service in an engineering regiment of the United States Army.

TWENTY YEARS AGO

The projectors of the San Angelo (Tex.) Gas Company have been granted an extension of six months' time for the commencement of construction work, which period was specified in the franchise as January 1, 1908.

Mr. Edmund M. Blake of Boston, Mass., is the latest applicant for a franchise to manufacture and supply gas to the residents of Joliet, Ill. He makes his tentative offer by remarking that he has "long been impressed with the splendid opportunity for profitable investment presented in Joliet," etc. If Mr. Blake wishes to know more about Joliet he can certainly do so by inclosing to us a 2-cent postage stamp. Meanwhile he should not "put it on so thick." It does not sound well.

If this is not the acme of assininity, to what further lengths may such quadruped go? This despatch was sent out by the "United Press" from Albany, N. Y., under date of the 14th inst.: "Persons using illuminating gas will pay for the pure article instead of for air, as claimed in many cases, if Assemblyman Hackett's bill, introduced today, becomes a law. It forbids corporations manufacturing gas from using engines or pumps for forcing air or other gases into the holders for the purpose of increasing the pressure of illuminating gas. A fine of $1,000 for each day a violation continues is provided. The Governor is to appoint inspectors, the salary to be fixed by him and the expense to be divided pro rata among the companies." Can anything exceed this for sheer ignorance of the subject?" "Forcing air or other gases into the holder for the purpose of increasing the pressure of illuminating gas?" Well! Well! Well!

FORTY YEARS AGO

President Gambrill and Treasurer Morton announce that books have been opened for the enrollment of subscribers to the stocks and bonds of the Consumers Water and Illuminating Company of Baltimore County, Md. The capital stock is placed at $200,000, the bond issue to represent $150,000. The latter are redeemable in 1928, and bear 6 per cent interest.

Middletown, Conn., had a rough time of it with her light supply about a fortnight ago. In the first intance, the apparatus furnishing incandescent lights refused to act, whereupon the glow worms forgot to glow—the hour being 7.30 P. M. Something like five minutes later the boiler at the gas works (Lowe process) struck, and the gas light, like a true Knight of Labor, joined hands with its glow worm relatives. The G. A. R. Fair in progress was adjourned for the evening, the post office called candles into requisition, and the evening services in the churches were postponed to a more auspicious occasion. The eclipse lasted two hours.

It is a wonder that the plant of the West Chester (Pa.) Electric Light Company remained intact for the length of time granted it—that is, if a local paper's suggestions thereon are to be accepted as true. At any rate, the News of that section is on record as saying: "It looks to us that the West Chester Electric Light Company was run on the 'Cheap John' plan. If it is true that it discharged a competent engineer, at a salary of $12 a week, in order to employ one who would work for $9 a week, there is a terrible responsibility resting upon it." In either event, the employment of an engineer to run a battery of three boilers at the salaries named would seem to indicate that the plant was run on the "murderous plan!" Street sweepers are not engineers.

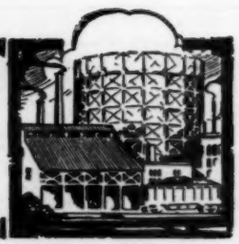
The boom at Sioux City (Iowa) still retains all its initial vigor, and the local gas men are keeping quite near to the bandmaster.

SIXTY YEARS AGO

The best material for gas fittings is iron, both for strength and durability it is less acted upon by gas than almost any other commercial metal.

The gas should be introduced through pipes of sufficient capacity to admit a good supply when all the lights are burning together, and at that period of the evening when the greatest quantity of gas is consumed, which is generally from 7 to 10 o'clock. Local situation will have to be taken into consideration, because those consumers who are upon rising ground, or in the upper stories of high buildings have a stronger pressure, owing to the levity or ascending power of the gas. It is better to have the pipes too large than too small; the difference in cost is a trifle, and the consumer can at any time add to his lights without any change in the original arrangement of the fittings.

NEWS OF THE GAS INDUSTRY



Westchester Lighting Company Host to Teachers

Thirty-seven teachers of Peekskill, New York, were guests of the Home Service Division of the Westchester Lighting Company, Mount Vernon, New York, at a dinner at the Hotel Siwanoy, Mount Vernon, Thursday evening, December 1, at 6.30 o'clock. The teachers assembled at the Ringgold Street High School, Peekskill, at 4.15 o'clock and were brought (a distance of approximately 35 miles) by a special bus chartered by the company, to the company's new office building in Mount Vernon, where Mrs. Cecil G. Harvey received them in behalf of the company's Home Service Division, in which she is director-in-charge. Mrs. Harvey introduced Mr. E. H. Rosenquest, president of the company, who greeted them with a short speech of welcome, outlining the many educational advantages Home Service offers.

After Mr. Rosenquest's speech, Mrs. Sarai Waugh, lighting specialist of the home, spoke briefly on eye conservation and the vital need for thoughtful lighting in the home.

Dinner was served the teachers at the Hotel Siwanoy at 6.30 o'clock. The teachers were presented with leather books containing "Westchester Light," the company's magazine and over 100 recipes.

After the dinner the teachers returned to the auditorium of the Lighting Company, where a musical program was presented. Audrey Relyea sang two groups of songs, with Ethel Henderson Newbold at the piano.

Following this program the 12 home service directors of the company, representing each of the company's district offices, escorted the teachers through the new building. The teachers evinced keen interest in the research kitchen, where all recipes are prepared before given out by the company. At the completion of the tour of the building the teachers were taken back to Peekskill in the bus.

Beal Medal Competition Is Greatly Stimulated

A special contest to be conducted every year for the Beal Medal of the American Gas Association has been announced by H. W. Hartman, assistant manager of the association and secretary of the technical section. This medal, awarded for the first time in 1897, is given by the Beal family for the best technical paper submitted at the annual A. G. A. convention.

"All members of the association have been invited to submit papers on technical subjects," Mr. Hartman says. "A special subcommittee of the technical section will judge the papers and select three for presentation at the sessions of the section during the annual convention. They will thus become eligible for the medal.

"The main condition specified by the donors of the medal has been that the subject shall cover original work on technical developments of fundamental importance to the industry. This does not exclude new or novel methods of handling existing problems or apparatus, but rather confines the award to the outstanding paper representing a distinct contribution to the progress of the industry.

"This competition will make it possible for all interested in the technical phase of the industry to receive the highest honor that the association can give to members in this important branch of activity."

The Beal Medal committee for the coming year consists of the following: O. H. Fogg, president, A. G. A.; W. C. Beckjord, chairman, technical section; J. P. Haftenkamp, past chairman, technical section.

Brooklyn Union in Role of Santa Claus

More than 3,000 youngsters—children of the employees of the Brooklyn Union Gas Company—were entertained at a Christmas party on Saturday, December 17, at Kismet Temple, Herkimer Street and Nostrand Avenue.

The hall was beautifully decorated with evergreens, Christmas wreaths and palms. In the middle of the floor stood a huge Christmas tree, decorated with toys, candy and other ornaments and illuminated with innumerable lights.

The doors of the Temple were opened at 12.30 P. M., and the party started at about 1 o'clock. Naturally, to all of the kiddies, Santa Claus was the main attraction. Santa delighted the children with comical antics around the Christmas tree and presented each child with a Christmas gift and a box of candy. An orchestra of eight musicians, dressed as clowns, furnished the music during the entire afternoon. An organist played an enjoyable program of Christmas carols.

The young audience was particularly amused by an entertaining program of vaudeville acts—including clowns, magicians and acrobatic comedians—and voiced their approval of this part of the program by enthusiastically applauding all of the entertainers. An intermission during the show enabled the committee to supply each child with ice cream and fancy crackers.

The party was given under the direction of the Brooklyn Union Gas Club, with Harold F. Coleman in direct charge.

Among the officers of the company who visited the party during the afternoon were: Arthur F. Staniford and Clifford E. Paige, vice-presidents; Henry E. McGowan, secretary; F. R. Wogan, assistant secretary; John T. White, assistant secretary; Herbert Wellington, treasurer; Thomas P. Payne, auditor; George M. Kirchmer, claim agent; John I. Blanchfield, E. H. Marsh and E. C. Uhlig.

Commission's Power to Enact Conservative Rules Declared Sufficiently Broad

The opinion of the United States Circuit Court of Appeals at New Orleans upholding the Texas Railroad Commission's power to make and enforce oil and gas conservation rules is declared broad enough by Attorney General Claude Pollard unequivocally to sustain the Commission's power to regulate municipal gas rates.

Pollard will file copies of the opinion with the Supreme Court in the City of Denison gas rate case. Pollard said that the last paragraph in the opinion is conclusive and that as amicus curiae he will file it with the Supreme Court in the Denison case, where the power of the Commission is being challenged in reviewing the action of the City Council in fixing what it deems a reasonable gas rate.

He pointed out that under the New Orleans decision the Commission will have power to pass on all municipal gas rate appeals coming up under the law vesting it with that jurisdiction.

The particular language of the opinion sustains the larger powers of the commission is that which says:

"It would seem to follow that the Legislature could impose powers and duties on the commission in addition to the powers granted to regulate railroads and railroad rates, and it also has been held in a well considered opinion by one of the Civil Court of Appeals of Texas."

"Forty-five Years of Public Service"

U. G. I. Company Issues Interesting Booklet

Forty-five years of public service is the title of an illustrated booklet recently issued by The United Gas Improvement Company, organized in 1882. Twenty-five thousand copies have been distributed to U.G.I. stockholders, banking institutions, business organizations and public utility officials.

The booklet contains a history of the operations of The United Gas Improvement Company and associated companies in thirty States from Maine to Florida and as far west as Idaho. For the first time in the history of the U. G. I. pictures of the directors and officers of the company are assembled under one cover.

A foreword by Arthur W. Thompson, president of the company, says:

"U. G. I. has grown from a modest beginning until today it is in the forefront as a servant of the public and has a high place in public opinion. This growth, to which I can refer with ego, having entered the U. G. I. service only a little over a year ago, is due to the foresight of the founders of the company and to the capabilities and energy of its officers and employees. Men have made the company, and of these men none has been a greater factor than Samuel T. Bodine, chairman of the board of directors.

"Mr. Bodine has been with the company since its organization, as clerk, bookkeeper, secretary-treasurer, vice-president and general manager and for fifteen years president. Always he has stood for clean work, clean living, clean policies and the highest ideals in public service. It is a great privilege to have this opportunity to pay him tribute.

"Under his leadership the U. G. I. organization has been developed to high efficiency, and this organization will, I am sure, carry the U. G. I. standards still higher by progress in technology, increased efficiency in management, enlarged financing and greater earnings for its stockholders."

The booklet shows that the U. G. I. and associated companies have more than 4,000,000 patrons and more than 200,000 investors. The company has an unbroken dividend record—having paid an average cash dividend since 1885 of 7.74 per cent. Extra dividends, according to charts published in the booklet, have been paid as follows: 1896, 15 per cent convertible scrip; 1910, 10 per cent convertible scrip; 1917, 2 per cent cash; 1925, 3 per cent cash, and 1925, 25 per cent stock. Gross earnings of the company in 1890 were $881,356; gross earnings in 1926 amounted to $10,320,578. Par value of common stock outstanding in 1882 $827,750; par value of common stock outstanding as of November 1, 1927, $106,488,800.

The booklet presents in detail the operation of the Philadelphia Gas Works under lease to the U. G. I. It tells of the lease, which expires December 31, and gives the terms of the new lease which has been negotiated with the city. According to the booklet, under the lease of 1897 to December 31, 1926, inclusive, The United Gas Improvement Company has paid to the City of Philadelphia in cash $55,781,435; in free gas and in the maintenance of street lighting $19,371,110, and has expended in improvements and betterments $32,644,233, making the total benefits to the city for that period $107,796,778.

U. G. I. Building, Philadelphia

The booklet contains a history of the U. G. I. Contracting Company and four pages of pictures showing public utility and other construction work done by the contracting company. There is also a history of the Welsbach Company and a list of the various public utilities in which The United Gas Improvement Company is interested.

Seeks to Reduce Number of Shares

New York State Gas & Electric Corporation, Ithaca, has filed a certificate in the office of the Secretary of State reducing the number of shares of its no par value stock from 125,000 to 100,000 shares.

Millions Expended in Bringing Natural Gas to West Texas Towns

An expenditure of $4,000,000 has brought natural gas into thirteen more West Texas towns. Lubbock is the latest of the cities to get the product, the gas being brought there from the gas fields northeast of Amarillo through a 210-mile line by the West Texas Gas Company. The other towns being supplied are Canyon, Happy, Tulia, Kress, Plainview, Lockney, Floydada, Hale Center, Abernathy, Monroe, Lubbock and Slaton.

The mains to Idalou, Lorenzo, Ralls and Crosbyton to the east of Lubbock have not been entirely completed, but these towns are expected to receive gas within a short time. Towns from Lubbock to Lamesa, including Tahoka, are included in a new branch line which will receive gas later, according to officials of the company.

An $8,000 office building for the headquarters of the southern division of the gas company is being erected in Lubbock. A warehouse for supplies and equipment is completed. Office and warehouse quarters are being rented in the other towns.

The gas is coming from what is recognized as one of the greatest gas fields of the nation, northeast of Amarillo. A fourteen-inch line has been laid from Amarillo to Plainview, and a twelve-inch line laid from Plainview to Lubbock. Branch lines from Plainview to Floydada and out of Lubbock to Slaton and Crosbyton are eight-inch pipes.

The West Texas Gas Company conducted open house at their new office building when the gas was turned on in Plainview. Officials of the company were in Plainview for the occasion. Those in the party were: W. W. Graves, assistant general manager of the West Texas Gas Company; V. A. Haynes, president of the advisory board of the Prairie Oil & Gas Company, which controls the West Texas Gas Company; W. H. Hafer, assistant treasurer of the company; Barney Hughes, public relations manager; Charles Oles, auditor of the Prairie; J. P. McCloskey, superintendent of the South Plains Pipe Line Company; J. J. O'Conner, Mrs. Hayes and Mrs. W. W. Graves.

Galena Gas Company Sold

The Galena, Ill., Gas Company, owned by J. G. Light and operated by him the last four years, has been sold to the Central Public Service Corporation of Chicago, which will immediately assume control and management of the utility. The plant had been shut down three years prior to Mr. Light's purchase and he rehabilitated the concern and placed it upon a sustaining basis.

Peoples Gas Plans to Purchase Coke Plant

In 1920 the Peoples Gas Light and Coke Company contracted with the Koppers Company for construction of a combination coke-oven and water-gas plant to be built in the southern part of Chicago. At that time it reserved the right to take over the plant whenever conditions would warrant such action. At a recent meeting of the board of directors of the company it was determined that the time is now right to exercise this option and it has been voted that the plant shall be taken over at an early date, probably about November 1.

The original investment in this property is approximately $21,000,000, of which $13,000,000 is covered by the bonds of the present owner, Chicago By-Product Coke Company. These bonds will be taken over by the gas company and the remainder of the purchase price will be paid to the present owner in cash procured by the issue of a new series of notes, maturing serially from 1928 to 1930. Application has been made to the Illinois Commerce Commission for authority to carry out this financing and it is expected that permission will be granted in the near future.

With the acquiring of this works, which produces about 20 billion cubic feet of gas yearly, the Peoples Company will probably be not only the largest single company distributor of gas, but also the largest single company producer in the world. In a few other municipalities slightly more gas is sold, but in no case, so far as is known, by a single owner corporation.

Crawford Avenue Plant

Society of Gas Lighting Elects Officers

The fifty-second annual meeting of the Society of Gas Lighting was held at the Hotel Astor, Thursday, December 8, 1927. The following officers were elected: President, W. Cullen Morris; vice-president, Olfred E. Forstall; treasurer, William J. Welsh; secretary, George G. Ramsdell; member executive committee, J. Arnold Norcross; finance committee, George H. Scranton, Oliver H. Smith, and Edward C. Uhlig, chairman.

Send-Out Record Broken

On Thanksgiving Day the Peoples Gas Light and Coke Company set a new single hour-send out record for all time at 14,263,000 cubic feet of gas between noon and one o'clock. Evidently Chicago believes in "do it better with gas" when it comes to roasting Thanksgiving turkey. The previous year's send-out record, also established on Thanksgiving Day, was 13,341,000 cubic feet.

Public Service Electric & Gas Company Educational Lecturers Prove Very Successful

For three years, as part of the educational work conducted by the Commercial and Accounting Departments of Public Service Electric and Gas Company, a series of lectures has been given at employees' bi-weekly meetings. A selected list of these lectures, which cover a wide variety of subjects dealing with the operating electric and gas departments as well as many special lines of endeavor, have been collected in one volume which has just come from the press.

Some of the lecture subjects are "Interconnection of Power Systems As It Affects New Jersey," by President Thomas N. McCarter; "Generation of Electricity," "Electric Distribution," "Illuminating Gas—How We Manufacture It," "Gas Distribution," "The Testing Laboratory and Its Work," "General Office Accounting," "Methods of Customer Service," "The Telephone in the Commercial Department," "The Central Departments," "Uses of Electricity and Gas Represented by Appliances on Our Sales Floors," "A, B, C's of Illumination," "Incandescent Lamps," "Electric Industrial Power," "Industrial Fuel Rudiments," "House Heating by Gas," "Work for the Home Economics Department," "Employment and Development of Personnel."

The lectures are non-technical in character and have proved of much value to the general personnel of the commercial organization. They have been delivered before some 600 educational meetings, attended by some 34,000 employees.

The chairman of the Educational Committee is Franklyn Heydecke, general auditor, electric department, with these other members: William H. Pettes, general auditor, gas department; Frederick W. Schmidt, general agent; Richard R. Young, vice-president in charge of sales: Edward A. Tuson and Ivan E. Gulick, general auditors respectively of the transportation companies and production company; Walter S. R. Dickinson is director of educational work.

Havre de Grace Company Changes Hands

The Havre de Grace Gas Company of Havre de Grace, Md., has been acquired in its entirety by the Atlantic Gas Company of Philadelphia.

Mr John S. Palmer, who was formerly manager of the Concord and Kannapolis Gas Company of Concord, N. C., has been appointed manager at Havre de Grace.

Extensive additions and improvements will be made in and around Havre de Grace and application for rate reduction has already been filed with the Public Service Commission of the State of Maryland.

Mr. N. H. Gellert of Philadelphia has been elected president of the company and will direct its policies.

Using Natural Gas in Drilling Oil Tests

Drilling contractors in the San Angelo section are now using natural gas in drilling oil tests, it has been reported by J. H. Morgan, manager of the Western Gas Service Company. This company has a pipe line from Coleman County to San Angelo, through the district where the drilling are making connections and using the gas in drilling the wells. The company has headquarters in San Angelo, supplying gas in this city, Rowena, Ballinger and Miles.

There are six drilling wells now using natural gas and it is understood that a number of others are contemplating its use, transportation facilities being the only hindrance. One of the wells using the product is the J. V. Cox and others' No. 1 Llano, about eight miles east of San Angelo in Tom Green County.

Symbols for Heat and Thermodynamics to Be Standardized

Under the auspices of the American Engineering Standards Committee joint work is now under way on proposed standard symbols to be used in engineering work for heat and thermodynamic units. The proposed standard covers symbols for practically all of the units or quantities commonly used in engineering calculations of this nature and it is hoped by the adoption of standard symbols that greater convenience and accuracy can be secured for engineers generally. Associations cooperating in the sponsorship for the work include A. I. E. E., A. S. C. E., A. S. M. E., Amer. Assoc. Advanc. Science, and Soc. Promotion Eng. Educ. Engineers desiring to contribute suggestions or criticism of the proposed form should address the secretary of the sectional committee, Mr. Preston S. Millar, care of the Electrical Testing Laboratories, New York City.

Busti Sees Gas Service in Prospect

The Pennsylvania Gas Company proposes to supply gas in Busti Township, Chautauqua County, under a consent by the town board on November 10, according to a petition filed with the Public Service Commission. The petition states that there is no service of natural or manufactured gas in Busti, that the company has an adequate supply of natural gas for the contemplated service, and that if the company's petition is granted, distributing lines will be built and service rendered along highways where residential development warrants.

Iowa Public Service Stock Offered

Harry H. Polk & Co., Des Moines, Iowa, has offered 4,000 shares of the first preferred stock of the Iowa Public Service Company at $100 a share, to yield 6½ per cent. The revenue from this sale will finance improvements and extensions of the service and reimburse the company for money already spent upon expansion. Management of the company is under the United Gas Improvement Company, Philadelphia, which controls the Sioux City Gas and Electric Company, with which the Iowa Public Service Company, serving 200 communities in the State, is connected, and the Des Moines Gas Company.

Commission Grants Permission to Operate Gas Plant

The Public Service Commission has granted to William F. Wendt, of Sanborn, authority to operate a natural gas plant and distribution system in the town of Cambria and part of the town of Lewiston, New York, from two producing wells which Wendt now has on his property producing about 46,000 cubic feet of natural gas a day. The Commission also approved a rate of 75 cents a thousand cubic feet to be charged customers, with a discount of five cents a thousand for prompt payment.

Personals

Winn Made Sales Manager

The appointment of John J. Winn, Jr., to the position of sales manager of the Fall River Gas Works Company, Fall River, Mass., was announced October 25th by C. C. Curtis, vice-president and manager.

Mr. Winn was first identified with the gas industry in 1923, when he organized and developed the industrial department of the Haverhill Gas Light Company of Haverhill, Mass., stressing particularly gas house heating, which was at that time a new development in New England.

In August, 1925, Mr. Winn took charge of the industrial department of the Fall River Gas Works Company as chief industrial service engineer. This position he occupied until his appointment as sales manager.

Both the Fall River Gas Works Company and the Haverhill Gas Light Company are under the executive management of Stone & Webter, Inc.

Duff Transferred to Boston

Alan D. Duff, assistant treasurer of the Fall River Gas Works Company, of Fall River, Mass., will be transferred on or about January 11, 1928, to the auditing department of Stone & Webster, Inc., in Boston, it was announced December 27th, by C. C. Curtis, vice-president and manager of the Fall River Gas Works Company. This company is under the executive management of Stone & Webster, Inc.

Mr. Duff has had a wide experience in the accounting field, having been employed by the Jamaica Government Railway, Kingston, Jamaica, the U. S. Government in Panama during the construction of the Panama Canal, the United Fruit Company in Bocas del Torro, Panama, and later in Boston, the General Electric Company in Schenectady, N. Y., and the United Shoe Machinery Corporation of Boston.

No announcement has been made concerning Mr. Duff's successor.

Boothby Becomes Manager at Lowell

Effective January 1, 1928, E. J. Boothby, for the past three years superintendent of works of the Fall River Gas Works Company, Fall River, Mass., was appointed manager of the Lowell Gas Light Company of Lowell, Mass. Both companies are under the executive management of Stone & Webter, Inc.

Mr. Boothby was born in Somerville, Mass., and was graduated from the Somerville English High School in 1911 and from Tufts College as chemical engineer in 1915.

Burton P. Jenkins, formerly assistant superintendent, has been appointed to succeed Mr. Boothby. George E. McCaffrey, formerly chief chemist, is now assistant superintendent, and Howard A. Lockhart, chemist, has been appointed chief chemist.

North Made Advertising Manager

M. Harlow North, formerly assistant advertising manager, was recently appointed advertising manager of the Fall River Gas Works Company, Fall River, Mass.

Mr. North has been with the Fall River Gas Works Company for the past two years. Prior to that he was with the Truckee River Power Company of Reno, Nevada.

Both the Fall River Gas Works Company and the Truckee River Power Company are under the executive management of Stone & Webster, Inc.

Swaim Joins Accounting Division of Commission

Appointment of Fred E. Swaim, of Huntington, Ind., a public accountant, as assistant in the accounting division of the Indiana Public Service Commission, has been announced. Mr. Swaim succeeds R. L. Gwinn, who recently resigned.

Col. Copley Resigns as President

Col. Ira C. Copley has resigned as president of the Western United Gas and Electric Company. It is understood the Insull organization will maintain the Western United as it was formed by Colonel Copley, who retains heavy financial interest in preferred stock of the utilities concern. Colonel Copley began organization of the Western United in 1889, when he inherited the old Aurora, Ill., Gas Company, and took his first step in organization when he merged an opposition company with the Aurora concern. He extended his interests up the Fox River and later acquired the Elgin plant, and

about the same time the Joliet Gas Company, and continued to La Grange, where he formed a utilities company. The extensions continued until he had established a utilities field 30 miles wide, extending around Chicago.

Symms Aspires to Gubernatorial Chair

Arthur Symms, receiver for the Linton Gas and Coke Company of Linton, Ind., will seek the Republican nomination for Governor in the primaries in May. He will center his campaign on a plan whereby the entire State highway system can be completed with hard surface material at once.

Matlack and His Powerful Pen

Out there in East St. Louis this bare and bleak December, Bill Matlack, an old gas man, was made chairman of the publicity committee for the Community Chest Fund, and the campaign proved a success for the first time in the history of East St. Louis.

When a community wants a wonderful job done, just page a member of the Old Gas House Gang—like William H. Matlack.

Obituary

Death Claims Roland G. Porter

Roland G. Porter, superintendent of production, Delaware Division, Philadelphia Suburban Counties Gas & Electric Co., Chester, recently died at his home in Swarthmore. Mr. Porter was born in Reading, Mass., May 14, 1879. He attended primary and preparatory school at Trenton, N. J., and Manlius, N. Y. After graduating from Princeton University he studied gas engineering in a technical school in Munich, Germany.

His first position was cadet engineer on works construction with Riter-Conley. He was then made assistant engineer of erection. Later he became engineer of manufacture at the Rockford Gas Light & Coke Company, Rockford, Ill. In 1918 he went to Chester. On December 1, 1927, he resigned this position to fill the chair of gas engineering at Purdue University.

Mr. Porter was a member of the American Gas Association, Franklin Institute, Princeton Engineering Association and the Swarthmore Business and Civic Association.

Trade News and Construction

U. G. I. Contracting Co. Activities

The third contract for U. G. I. Intermittent Chamber Ovens to be received will take care of the installation at Clinton, Iowa.

The Clinton installation will consist of three benches, each containing four Type "S" ovens, which will carbonize 46 tons of coal per day without steaming. A waste heat boiler will be included for the generation of steam from the waste producer gases, and the usual pumps and other auxiliary equipment will be installed.

This installation, like its predecessors at Dubuque and Racine, will require but a small amount of labor to operate.

The Iowa Electric Company is preparing to enlarge its plant at Atlantic by the installation of additional equipment.

The contract for the work includes the installation of a 5-foot U. G. I. carburetted water gas set with Chrisman cycle, together with the pumps and other necessary connections, two 10 foot circular steel purifiers with connecting manifold and one 4 foot by 25 foot 6 inch U. G. I. high duty condenser, with its connections.

Capacity of Connersville Rotary Displacement Meters at New Brooklyn Union Plant

Each of the four Connersville rotary displacement meters at the new gas plant of the Brooklyn Union Gas Company carries a normal load of 18,000,000 cubic feet of gas per day with a possible maximum of 22,500,000 cubic feet per day. It is interesting to note that this is the first large installation of this type of meter in the East.

Each of the Connersville exhausters, also installed at this plant, has a capacity of 700,000 cubic feet per hour under standard conditions, operating with zero inlet pressure and against two pounds discharge pressure.

Western Gas Construction Company Completes Building Program

The new machine shop of the Western Gas Construction Company at Fort Wayne, Ind., which has been under construction for several months, has been completed and all the machinery removed from the old shop into new quarters. The old shops had been in operation since 1899.

The new storeroom of the company also is completed and the stock just installed. The forge shop is just about ready for operation. It is planned to have a new administration building completed by the first of March next year. With the completion of this structure the half-million dollar new building program of the company will have been completed.

Duplicate Thomas Meter Order for Natural Gas Field

The Cutler-Hammer Mfg. Co., Milwaukee, Wis., manufacturers of Thomas Meters for measuring gas quantity and Thomas Calorimeters for measuring gas quality, announces that duplicate Thomas Meter equipment has been ordered by Ford, Bacon & Davis, Inc., for natural gas measurement for Kenner, La.

These meters have a capacity of 1,750,000 cubic feet per hour and are installed in parallel. The original two meters were installed in the Monroe field in North Baton Rouge, La.

Semet-Solvay Engineering Corporation to Build Steel Purifiers—Other Contracts Received

The Semet-Solvay Engineering Corporation of New York has been awarded a contract by the Management and Engineering Corporation, of Chicago, for the construction of a purifier to be built on the plant of the St. Louis Coke and Iron Company at Granite City, Ill. Coke oven gas will be purified and piped to the mains of the Laclede Gas Light Company, St. Louis. Construction work will proceed at once.

The purifiers will be of the Steere type, built of steel and arc welded. There will be four round boxes, each 35 feet in diameter and 12 feet 6 inches high. Gas will be sent through at a normal rate of 270,000 cubic feet an hour. The four boxes will contain 7,700 square feet of trays for holding oxide.

Manifold piping will be of the forward rotating type. Any of the boxes can be by-passed when desired. The manifold will be made of welded steel piping, 20 inches in diameter, and fitted with Steere Van Stone flanges and Steere gate valves.

come out of the kitchen

Welsbach

presents a water heater sales idea as modern as the HOTZONE

For years water heater sales promotion has been chained to the kitchen. Manufacturers and gas companies have been equally guilty in making the water heater a boon companion of dirty dishes and soiled linen. But now Welsbach, with a water heater that deserves better associates, leads the parade out of the kitchen. Women are seeing the hot water service of the Hotzone as an important aid to beauty. They are seeing it as a companion of their powder puff, creams and lotions.

Every beauty system preaches the need for warm water at late and early hours. The Welsbach Hotzone steps out of the kitchen into the boudoir where money is spent freely by all classes.

If you want greater water heater sales get acquainted with the greater selling plan of Hotzone. A Welsbach franchise brings with it the key to sales. Write Welsbach Company, Gloucester City, N.J.

Offices in principal cities

HOTZONE
SELF-ACTING WATER HEATER

Member of American Gas Association

Contract has been received to construct a single elevated type compartment purifier for the Nassau and Suffolk Lighting Company, Hempstead, L. I. It will be 31 by 30 by 13 feet in size and equipped with a hand operated gantry crane, platform for operating valves and an elevator and screw conveyor for handling oxide. The purifier will have a 24 inch manifold. Purifier and piping will be constructed of steel and arc welded.

The Great Lakes Utilities Corporation has ordered a quantity of Steere welded steel piping for the plant of the Ohio Gas Light and Coke Company, Bryan, Ohio. The pipe ranges from 8 inches to 16 inches in size. Ten Steere gate valves and one 16-inch blast gate is included in the layout. The installation of a Steere water gas machine at this plant is now nearing completion.

Fifty-seven banks of Steere cooling coils have been purchased by the Youngstown Sheet and Tube Company. They will be installed in the company's coke oven plant at South Chicago. The coils will be 40 tubes high and 20 feet long. They will handle the liquor produced from a carbonization schedule of 2,000 tons of coal every 24 hours. The coils will be sherardized to withstand corrosion. They will be of standard Steere welded construction. Distributing troughs will be equipped with leveling screws to permit adjustment and assure even water distribution.

The Semet-Solvay Engineering Corporation of New York is furnishing Steere welded steel pipe with Van Stone flanges, gate valves and blast gates for the Jacksonville Gas Company, in connection with a new blower installation. The pipe ranges in size from 20 inches to 30 inches.

Reynolds Expands Sales Program

The Reynolds Gas Regulator Company, internationally known manufacturers of gas governors and controls, announces further expansion of their sales program by establishing direct factory representatives in the eastern States of New York, New Jersey, Delaware, Maryland, Virginia, Pennsylvania, District of Columbia, and in Michigan. This expansion provides the increased facilities necessary to properly serve the ever increasing trade accorded them by their many new friends and customers in Detroit and New York territories. In addition, the services of the factory experimental and construction departments are available through these two new sales offices, giving better and closer personal service than ever.

Mr. F. E. Newberry, Avon, N. J., is in charge of the New York territory, and Mr. Thomas C. Corin in charge of the Detroit office. Mr. Newberry has had experience as manager of public utility properties and has a valuable store of engineering knowledge and practical experience that should be of real assistance to firms in his territory on their gas control problems. Mr. Thomas C. Corin is also well equipped to handle any problems that may confront the Reynolds many customers in Detroit territory.

The Eastern Service Company, 250 Stuart Street, Boston, Mass., has represented the Reynolds Gas Regulator Company since October, 1926, and will continue in this territory.

Gas Machinery Company to Build 11-Foot Water Gas Apparatus at Binghamton, N. Y.

The Binghamton Gas Works has awarded contract to the Gas Machinery Company at Cleveland, O., for one new 11-foot carburetted water gas apparatus, complete with overhead brick operating floor, exhaust steam piping and valves, outlet for future waste heat boiler, aspirator for soft coal operation and automatic control.

The new set will be placed in the existing building alongside of the eleven-foot gas machinery set installed a few years ago.

The Washtenaw Gas Company, Ann Arbor, Mich., has awarded contract to install a nine-foot carburetted water gas apparatus in the space available in the present water gas building.

The nine-foot set has overhead operating floor, and is provided with hand hydraulic operation.

The Binghamton Gas Works at Binghamton, N. Y., has awarded contract for one Cooling Scrubber comptete with tray filling, sprays, safety ladder, and top railing. The contract also includes Gas Machinery Company Cooling Coils of the very latest design.

The Cooling Scrubber will be placed at the outlet lines of the relief holders and just ahead of the gas exhausters.

Western Gas Construction Co. to Install Eight-Foot Generator—Other Construction Activities

The Central Hudson Gas and Electric Corporation, Poughkeepsie, N. Y., has placed an order with the Western Gas Construction Company, Fort Wayne, Ind., for the installation of an eight-foot generator on their present set at Newburgh, N. Y. On this same set will be installed new angle connections, "Western" bypass connections and a double inlet tar batter. An order has also been placed for a washer cooler at Newburgh having a capacity of 85,000 cubic feet per hour, with provisions for an ultimate capacity of 125,000 cubic feet per hour. There will also be a new 24-inch overhead steel hot line from the sets to the relief holder.

The Northern Indiana Power Company, Huntington, Ind., have placed contract for rebuilding their present storage holder. The construction work will be done by the Western Gas Construction Company.

Contract to furnish and install eighteen miles of six-inch and eight-inch high pressure gas main for the Lake County Gas Company of Painesville, O., has been received.

The Missouri Gas & Electric Service Company has awarded a contract to add an outer section to its present 50,000 cubic foot gas holder now installed at Marshall, Mo.

The Peoples Gas Light & Coke Company, Chicago, has awarded a contract for the installation of eight 54-foot diameter by 15 foot deep steel purifiers, to be erected at its 110th street station.

The Western Gas Construction Company has been awarded the contract for furnishing one 40,000 cubic foot single lift gas holder to be erected at the plant of the Connecticut Coke Company, New Haven, Conn. Additional contracts include furnishing one welded steel purifier box of four compartments, each compartment 36 by 58 by 13 feet deep, complete with steel covers, two layers of trays, gantry crane and 30 inch circle series connections.

Contract has been awarded by the Bement Gas Company for furnishing compressor, high pressure tank and system of governors for its natural gas plant at Petersburg, Ind.

The Detroit City Gas Company has placed an order for three high pressure baffle tanks 10 feet in diameter by 40 feet long.

The Wisconsin Public Service Corp. has placed contract for one high duty condenser.

Contract has been received from the Great Lakes Utilities Corp. of New York for furnishing purifiers for Rochelle, Ill., Fairbury, Neb., and Concordia, Kan.

The Murray W. Sales Company has placed contract for a large quantity of 30-inch, 24-inch, 20-inch and 18-inch welded steel pipe to be used for exhaust steam purposes.

New Coke Ovens Planned for Rockford and Freeport

Coke ovens and extensions of pipe lines to serve the Rockford and Freeport, Ill., communities, costing $1,000,000, are scheduled for next spring by the Central Public Service Corporation of Chicago, which through two of its subsidiaries last week

That 1928 Increase—
Where is it coming from?

The year 1928 will be a record smasher for hundreds of gas companies. Big increases in volume sales and new gains in gas load building will reward those who plan right.

Humphrey Automatic Water Heaters are going to do their share. They belong in your plan for increased business.

Prices are Right

Our new set-up is made to order for every company that is eager to build at a profit. You kill two birds with one stone every time you install a Humphrey Automatic. There's the immediate profit—a generous one—and automatic, faucet-controlled consumption from then on.

The most complete line of heaters made—"Built for Lasting Service," every one. Efficiency, durability, economy that encourages constant use and low maintenance.

Unequalled Sales Co-operation

Never before have we been in a position to do so much in the way of direct sales promotion through the gas company as now. Our sales plans bring sure success—we have records to prove it.

Every company that gets behind our line with real selling pressure, the kind that doesn't let up, will find Humphrey Heaters and Humphrey co-operation the high-scoring profit combination for 1928.

Let's get together and figure it out. We'll give you a plan that will work. Write—

HUMPHREY COMPANY
Kalamazoo, Mich.
[Div. Ruud Mfg. Co.]

acquired the Rockford, Ill., Electric and Rockford Gas, Light and Coke Companies. The Federated Utilities, Inc., of New York is nominally new owner of the gas and coke utilities and the Central Gas and Electric Company, the Rockford Electric concern. Henry S. Whipple, manager of the gas and coke utilities in Rockford, and Adam Gschwindt, manager of the electric utilities, will be continued as managers of the two utilities, positions they occupied under the former ownerships. The present gas plant in Rockford will be partially abandoned and new coke ovens will be erected on a site yet to be secured, probably at the edge of the city. The sale of the properties halts the $700,000 improvement program planned by the old company. The new plant will make possible the utilization of Illinois coal for production of gas, replacing the present retort system. Col. A. E. Pierce, Winnetka, is president of the Central Public Service, but preliminary outline of the improvements projected was made by Richard L. Aage, executive secretary of the utilities.

Long Island Company to Lay 100,000 Feet of Mains

That part of Oyster Bay Township, L. I., Locust Valley and nearby, will be supplied with gas for light, heat and power under an order by the Public Service Commission, approving a franchise to the Long Island Lighting Company by the Oyster Bay town board for operating throughout the entire township.

The Long Island Company is developing plans for the Locust Valley service, which includes the laying of 100,000 feet of gas mains, thereby connecting existing gas mains at Glen Cove and Oyster Bay.

It was shown at the hearing before Chairman Prendergast that Oyster Bay communities are supplied with gas under local franchises granted to three companies, each restricted in territory. The Long Island Company is now supplying Massapequa, Hicksville and Farmingdale, under a franchise granted to the South Shore Gas Company, now owned by the lighting company. Gas service is provided in the western and northwestern parts of the town under franchises granted to the Sea Cliff and Glen Cove Gas Company and the Public Service Corporation, which will soon be merged with the Long Island Lighting Company.

Twenty-two Mile Gas Main Proposed

The Illinois Power & Light Corporation has under consideration plans for the increase of facilities in Clinton, De Witt County, Illinois, and the construction of a 22-mile gas main from Decatur to Clinton, or construction of an addition to the Clinton plant which will double its capacity. The new pipe line is considered more feasible as it would provide for gas service to intervening towns. The project is scheduled for completion in 1929.

Whyte Joins Pittsburgh Valve, Foundry & Construction Co.'s Sales Force

The Pittsburgh Valve, Foundry & Construction Company is pleased to announce the addition to its sales organization of Mr. Robert Whyte, who for many years has been associated with the Pittsburgh Piping and Equipment Company and the American Foundry and Construction Company.

86-YEAR-OLD GOLD PEN COMPANY USES GAS

Has Made Pens for Presidents

Of the 21,000 uses for gas in industrial heating processes, one of the most interesting is in the manufacture of gold pen points in a Cincinnati factory which has been making these pen points for eighty-six years. Various presidents of the United States since Lincoln have used pens made by this company, including Taft, Roosevelt and Harding.

More than thirty years ago the company adopted gas fuel because of its evident advantages over other fuels, according to Robert O. Holland, president of the company.

"Gas gives us better control, cleanliness, and above all, convenience," says Mr. Holland. "We can light it when we need it and can turn it off when we don't."

This gold pen factory, the first in the world, was started over a barber shop in Cincinnati in 1841 and has prospered much the same as other American industries, according to Alvin M. Forkner, of the Columbia Gas and Electric Company, which supplies fuel to the pen company.

"Pens as instruments of recording thought, date to ancient times," says Mr. Forkner. "Copper and iron pens existed in early European civilization. Quills were in general use in England during the sixteenth century, and in 1830 a durable steel pen was invented.

"George W. Sheppard, originator of the first durable gold pen and maker of the first fountain pen, modernized the field of writing instruments in his Cincinnati factory."

General Lew Wallace, of Civil War fame, wrote "Ben Hur" with a gold pen made by this company.

Book Review

Steam Boilers, First Edition, American Gas Association, New York, 95 pages, illustrated, $1.50.

This book, which has been prepared under the direction of the Industrial Gas Section of the American Gas Association, ably sets forth such items as the generation of steam and its calculations, a discussion of the steam boiler from all angles, determination of boiler sizes and calculation of their ratings, boiler installation and boiler accessories, consideration of the subject of feed water and boiler operation.

A feature of the book is found in Chapter 7, which presents a survey of some industrial boiler installations together with some well chosen pictures.

In the appendix may be found a list of the gas boiler manufacturers, and also a list of industries in which the gas-fired steam boiler finds most ready application.

This book, which reflects high credit on those who have been instrumental in its compiling and editing should enjoy a wide sale. Industrial gas men, and indeed many others, will welcome it as a mainstay in developing this phase of their business.

Its scope is concerned essentially with the application of gas to steam boilers used mainly for industrial purposes.

Manufactured Gas. American Schaeffer & Budenberg Corporation, Brooklyn, N. Y. 44 pages, illustrated, $1.00.

This well gotten up little handbook, which is one of the series, "American Industrial Instrument Manuals," is compiled from data gotten from authoritative sources.

It briefly describes the various steps in gas making and points out where recording and indicating instruments should be used to control the various processes. Moreover, it advises the engineer as to the determining factors in the proper selection of such instruments.

The illustrations are timely and well chosen and the manual is pleasing in appearance.

The American Schaeffer & Budenberg Corporation, Brooklyn, N. Y., will mail this booklet, free of charge, to any gas engineer who will properly fill out and mail in a questionnaire which may be obtained from this company.

WHEN THE ARCHITECT WANTS TO TICKLE THE BOSS

He gives him Ridgway Elevators.

Here are some facts that tell the story:

Right now as we write this ad the following Biggest Concerns in the land are getting **MORE** Ridgway Elevators.

Mark you **"MORE."**

The E. I. Du Pont de Nemours Co.
The Grand Rapids Refrigerator Co.
The Susquehanna Silk Mills
The Consolidated Gas Co., N. Y.
The Brooklyn Union Gas Co.
The B. F. Goodrich Co.
The Spingfield Gas Co.

Why do they order MORE Ridgway Elevators? Perfection, that's why. Look around you a little bit and see WHO get Hydraulic Elevators.

"Altman's"—New York's great department store.
"Tiffany's"—The world's greatest jewelry store.
Pennsylvania and **Grand Central** stations.
"Wanamakers" New and Old store in New York and Philadelphia.
Bureau of Engraving and Printing at Washington.
Why prefer Hydraulic Elevators?

BECAUSE THEY ALWAYS GO

As a factory manager don't you want the same?

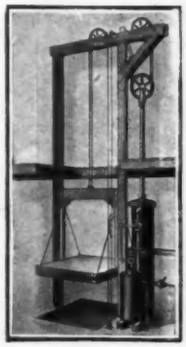
If you have steam you get the finest thing in the world in elevators and will forever bless your architect if he is wise enough to

"HOOK 'ER TO THE BILER"

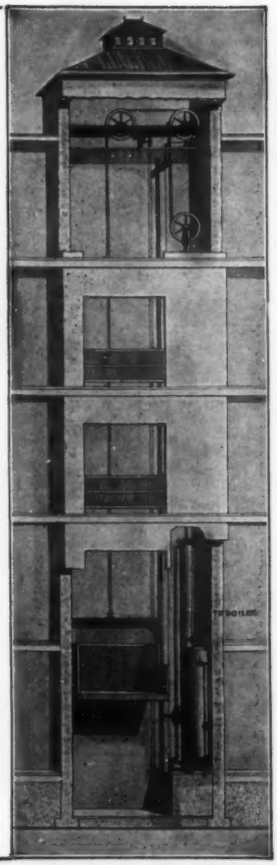
Craig Ridgway & Son Co.

Over 3,000 in daily use. **COATESVILLE, PA.**

Direct Acting



Double Geared



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Gas Meters
Provers
Service
Cleaners
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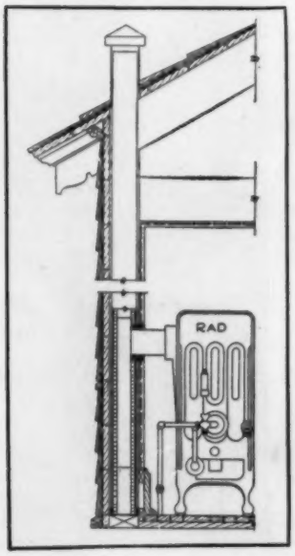
SUPERIOR METER CO.
167 - 41st Street
Brooklyn, N. Y.

STEAM FOR HEAT — GAS FOR FUEL



Solving The Moisture Problem

Clow Vented Gasteam Radiators have solved the moisture problem that has held back gas heating in many sections of the country. The above diagram shows how surplus moisture in the products of combustion is disposed of.

$10,000 Worth of Gas Business—*That is Easy to Get*

The gas consumption in the 48 United Cigar Store Gasteam installations, in one large city, amounts to $10,000 a year. In towns of every size—wherever there is gas—there are stores, restaurants, and other buildings that are prospects for this ideal heat—all potential gas consumers.

Every small shop and store using Clow Gasteam — on the average—brings a manufactured gas company over $200 worth of gas business per year.

And this commercial load does not greatly interfere with the regular "breakfast", "evening", "Sunday" peak—as the commercial load is largely off during these periods.

Our new catalog shows the application of Gasteam for all types of buildings—in all parts of the country. Send for it.

JAMES B. CLOW & SONS
201-299 North Talman Avenue, Chicago

CLOW GASTEAM

A. G. A. and Underwriters' Laboratories Approved.

STOCKED IN EVERY SECTION OF THE COUNTRY

NEW ROPER COLOR RANGES

No. 700 R6 T3

HERE'S the biggest sales-making, profit-increasing booster that has come to the dealer in gas ranges in many a year... Roper Color Ranges —Roper ranges in brilliant, lustrous hues to match artistically into the latest decorative feature of modern homes, the kitchen furnished and equipped even to enamelware in harmonious tints and shades of one color... Roper has produced the one and all important item in kitchen furnishing and equipment to give complete color harmony... We have brought forth color ranges — beautifully enameled in four striking colors — Delft Blue, Imperial Red, Canary Yellow, with Jade Green... With this spread of color, Roper has a range to fit harmoniously into any color scheme planned for a kitchen.

Put Your Stock of Ranges in Tune With Kitchen Color Harmony

THIS big innovation in the home means money to you. It will speed replacement of old ranges, and lift the price a customer will pay for a range; for the housewife is buying more than equipment for the kitchen. She is buying beauty for her home.

The demand for color in ranges will soon be on you. If your display does not have color ranges, your patrons will know it is not an up-to-the-minute stock.

Wire your initial order for Roper Color Ranges. The ranges available for display at the start will be limited. Write for the full story of the newest and biggest stride in gas range merchandising history.

GEO. D. ROPER CORPORATION, ROCKFORD, ILL.
Pacific Coast Branch: 135 Bluxome Street, San Francisco, Calif.

ROPER

GAS RANGES
in Color

BLUE RED YELLOW GREEN

On selecting a protective paint

The importance of protecting metal surfaces against rust and corrosion is generally recognized. There are prevalent, however, many different ideas about protective paints and their respective merits.

The intelligent selection of a protective paint requires a knowledge of three facts:

***First,* a knowledge of the pigment and vehicle used.**

***Second,* a knowledge of the service records made by the paint and representative satisfied users.**

***Third,* a knowledge of the manufacturer's reputation and facilities.**

With this knowledge, it is usually easy to determine whether or not a particular paint will meet the requirements of a specified service.

In future issues of this magazine we will show the importance of the physical properties of protective paint pigments and especially the difference in pigments.

The labor cost for painting averages 1½ cents a square foot (about twice the cost of the paint applied). This labor cost is the same whether a cheap paint or a good paint is used. When you use good paint that lasts twice as long in service, the labor cost is halved at a fractional increase in the small paint cost.

That the reputation of the Joseph Dixon Crucible Company is unimpeachable is evidenced, not only by our many satisfied customers the world over, but also by the fact that the year 1927 marked our One Hundredth Anniversary.

For one hundred years our business has followed every ramification of graphite use. With every known grade and form passing through our hands, we are in a position to select and use that kind of graphite best suited to any particular purpose.

Write for Color Card and Booklet B.

JOSEPH DIXON CRUCIBLE COMPANY

JERSEY CITY D X N TRADE MARK NEW JERSEY

ESTABLISHED 1827

DIXON'S SILICA GRAPHITE PAINT

ADEQUATE PROTECTION AT MINIMUM ULTIMATE COST

A New Gas Heater *for the* Small Home

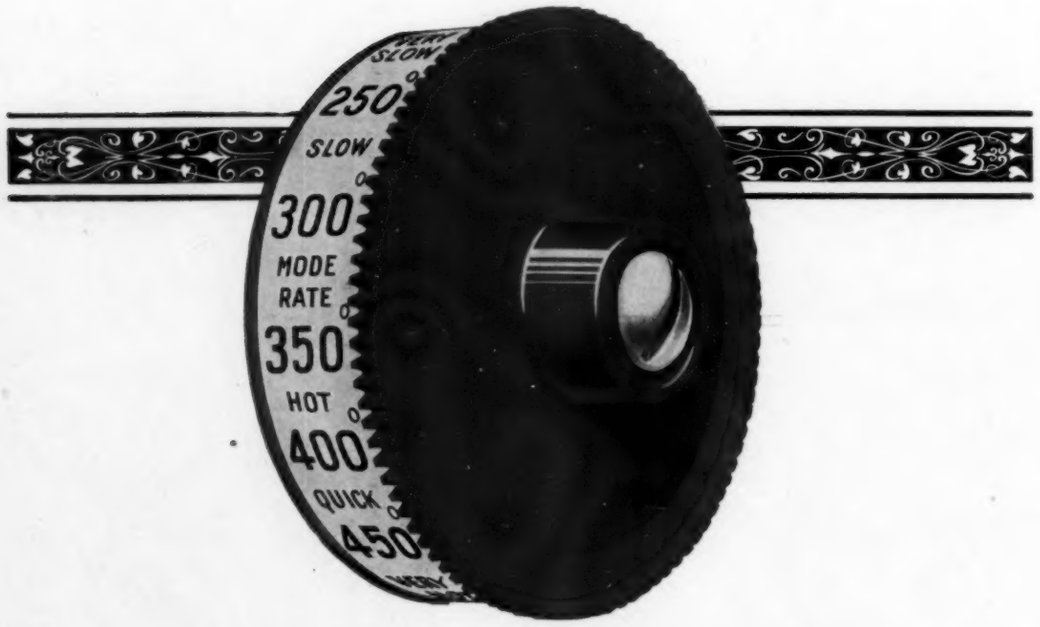
MORE than 50 per cent of the homes now being built in America cost $10,000 or *less*—this means that one out of every two buyers will demand a small heater to fit the needs of the small home.

The new Brunswick gas water heater has been produced, after two years development, to meet this demand. Low in price, beautiful in design, efficient in operation—the Brunswick embodies every feature of Kompak quality. Note the features:

1. 250 lb. test copper boiler with bronze heads which withstand the action of gas burning directly on the bottom.
2. Sensitive snap-acting control, operating to four-degree change in temperature.
3. The Kompak automatic pilot, perfected by 7 years of use on 20,000 heaters.
4. The Kompak automatic fusible plug shut-off.
5. The incomparable Kompak brass burner.
6. Lead-coated flue lining around copper boiler.
7. Copper-dip pipe for cold water supply.
8. Brass unions on both hot and cold water.
9. Beautiful gray enamel jacket with blue enamel trimmings.
10. Two sizes—20 and 30 gallon capacity.

The gas industry—and the small home buyer—will welcome the Brunswick. Let us send you further details.

THE KOMPAK COMPANY
New Brunswick, New Jersey



"Whatever is popular deserves attention."—MACKINTOSH

Who, besides American Stove Company, has made a really great, continual, sincere and successful endeavor to impress upon the minds of the American Public the many outstanding advantages of gas as a fuel for cooking?

AMERICAN STOVE COMPANY, *801 Chouteau Avenue*, St. Louis, Mo.
LARGEST MAKERS OF GAS RANGES IN THE WORLD
These are the Six Famous Brands of Red Wheel Gas Ranges:
DANGLER · CLARK JEWEL · QUICK MEAL · DIRECT ACTION · NEW PROCESS · RELIABLE

LORAIN

THROTTLING CONTROL

Now optional equipment on IDEAL GAS BOILERS

The No. 596 Throttling Valve

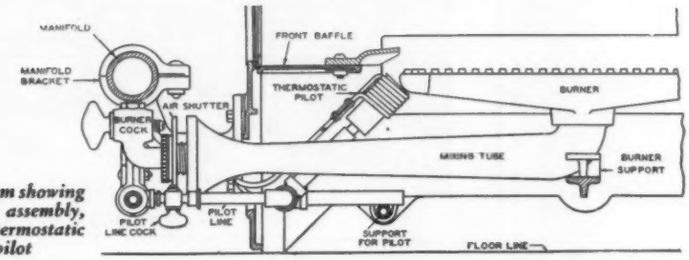


Diagram showing burner assembly, with thermostatic pilot

THE *No. 596* THROTTLING VALVE includes all the functions of the already well-known *No. 600* Snap Action Valve. Either of these valves is now regular equipment on Ideal Gas Boilers. This throttling control provides a gradual and extremely sensitive regulation of the gas supply by means of the Throttling Lever operated either by steam pressure or water temperature regulator.

The burners are never entirely extinguished by the Throttling Lever, a By-pass adjustment providing a minimum flow of gas to the burners. This has the advantage of limiting fluctuation in the gas supply and giving absolutely even boiler control. On the other hand, the valve is completely closed by the action of the Thermostatic Pilot, Low Water Cut-Out, Weighted Valve Pin, or Spring Valve Pin.

The exceptionally flat efficiency curve of Ideal Gas Boiler performance makes the throttling method of control ideal where automatic regulation of the system depends only upon steam pressure or water temperature. This applies particularly to large battery installations, small jobs where the cost of a room temperature thermostat may not be justified, and hot water supply installations.

OPERATION

1. Steam Pressure or Water Temperature Regulator operates Throttling Lever, providing a gradual control of the gas supply.
2. Adjustment of by-pass for minimum flow of gas is provided by means of a screw with locknut under Throttling Lever.
3. Thermostatic Pilot completely shuts off main gas supply should pilot become extinguished or gas supply fail.
4. Weighted Valve Pin completely shuts off main gas supply automatically when connected with Low Water Cut-Out.
5. Main gas supply can also be completely shut off when desired by means of Weighted Valve Pin or Spring Valve Pin.

Comparative tests have shown no measurable difference in fuel consumption under either the Snap Action or Throttling method of control, even when the boiler is operated at less than 20% of rating.

Under average conditions the adjustments of the By-pass should be such that, with the throttling lever in the closed position, the flow of the gas to the burners is not less than 25% of the full rated gas consumption. The actual output of the boiler at By-pass would then be approximately 20% of its rated capacity, considerably less than the amount of heat required to maintain temperature in boiler and piping, but providing instant response to any sudden heating demand.

In cases where it is desirable to have the flow of gas to the burners entirely shut off by the operation of a Room Thermostat or similar control, this can be done advantageously by locating an electrically-operated or mechanical Snap Action Valve in series with and on the inlet side of the Throttling Valve. By this method, gradual and sensitive regulation, according to boiler temperature or pressure, is obtained by means of the throttling lever, and the gas supply is completely shut off by means of the additional valve.

AMERICAN GAS PRODUCTS CORPORATION

Distributors: 376 Lafayette Street, New York City

A Bigger and Better Organization to Work with Gas Heating Men

Gas company executives have come to look upon automatic control as the strong right arm of their gas heating program — for easier sales, satisfied customers, greater profits resulting from an improved load factor.

Today these advantages have assumed new importance because of the Minneapolis-Honeywell merger, which combined the two acknowledged leaders in temperature control.

Separately, these companies had established a remarkable record for engineering progress. Now with unified facilities and resources, the new organization offers gas companies a still more powerful incentive to stress automatic control for house heating.

Honeywell Model R

Minneapolis Model 77

MINNEAPOLIS
REGULATOR COMPANY
HONEYWELL

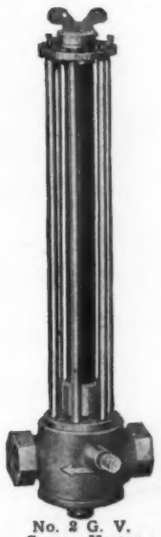
Executive Offices: Minneapolis *Factories:* Minneapolis and Wabash, Ind.

Just the proper thing for the Gas Heated Garage

The ROBERTSHAW
THROTTLING TYPE

Garage Heater Thermostat

Keeps the Garage at a Uniform Temperature Regardless of Cold Weather or Sudden Temperature Changes



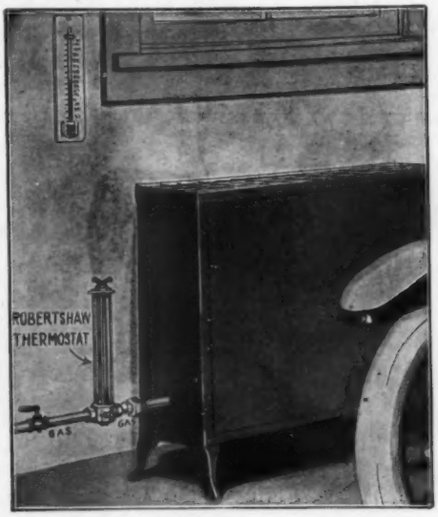
No. 2 G. V. Garage Heater Thermostat

Adaptable for Use with Practically All Makes of Gas Fired Garage Heaters

Easily Installed — Rigidly Constructed

Adjustable to maintain any temperature from 40° to 80° F.

Showing a Typical Installation of the Robertshaw Throttling Type Garage Heater Thermostat



The Uniform Temperature of the Garage affords many advantages that the Car owner will readily appreciate. First of all, it makes a comfortable workroom, the car starts easily, no danger of freezing the Radiator or Battery, no cracked cylinders, no clogged oil pipes, and the uniformity of temperature preserves paint and tire, and saves gas by using no more than is actually required to maintain the desired temperature.

Recommend the Robertshaw Garage Heater Thermostat to your customers.

They will appreciate the suggestion and you will profit by the Resale Discount.

Write for complete information, and if you want a supply of Garage Thermostat Circulars imprinted with your name and address, for mailing to your customers, let us know.

Its Successful Performance is fully Guaranteed

THE ROBERTSHAW THERMOSTAT CO.

YOUNGWOOD, PA.

FULTON LOW PRESSURE GOVERNORS

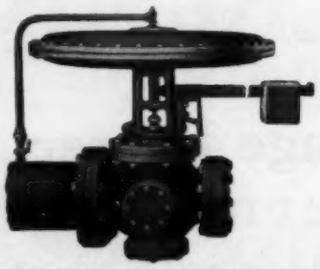
Fulton Low Pressure Governors are designed to reduce the pressure in the service mains as low as may be convenient for safe and economical combustion.

They are generally used to reduce from one to fifty pounds on the high pressure side to a few ounces.

They may be set to reduce to two ounces, or any pressure up to one pound. Any pressure desired is instantly accomplished by changing the weight on the lever.

Our improved style of valve makes a perfectly tight joint, thus preventing increase of pressure on low side when the consumption is light or entirely shut off; and, being perfectly balanced, it is not affected by the variations of pressure that may occur on the inlet side.

Made in all sizes up to 24 inches.



Send for our illustrated catalog.

The CHAPLIN-FULTON MANUFACTURING CO.

PITTSBURGH PENNSYLVANIA

BAROMETERS

PHILADELPHIA, THE WORKSHOP OF THE WORLD, has 14,000 Manufacturing Establishments of which many have World-Wide Reputations.

"PRINCO" STANDARD FORTIN MERCURIAL BAROMETERS

are in World-Wide use because they, too, have a "World-Wide Reputation"

THEY ARE GOOD BAROMETERS
THEY ARE REASONABLE IN PRICE!

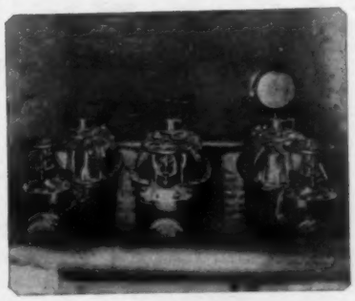
For more than a decade they have been made in such manner that they can be shipped safely and successfully wherever there is a common carrier. This has been recognized as an achievement in Barometry.

PRECISION THERMOMETER & INSTRUMENT COMPANY

1439 BRANDYWINE STREET - - - - - PHILADELPHIA, PA.

EMCO LARGE CAPACITY METERS

EMCO



Good Judgment Dictates Emco Meters

-Experience Confirms It-

Whenever a thorough analysis of the comparative merits of gas meters is made—good judgment always indicates EMCO as the logical choice—for EMCO meters have a cast iron durability, a positive accuracy and an easy accessibility that appeals to every progressive Gas Company alike.

The EMCO cast iron construction originated by this Company marked the greatest advance in the history of the meter industry by replacing the frail and unsatisfactory tin meter. Since this time, EMCO has steadfastly maintained this leadership by constant improvement.

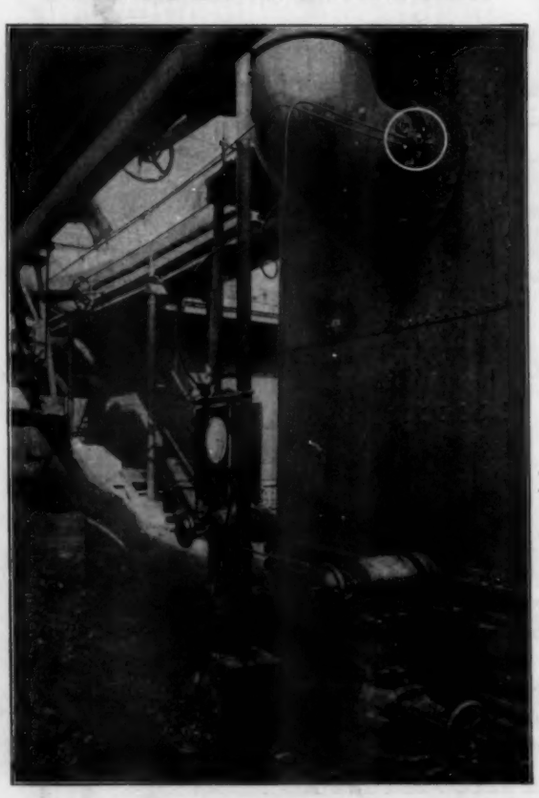
As a result, EMCO meters of today have many exclusive features in design, one of which is the easy accessibility which makes it possible to repair or adjust an EMCO meter in a few minutes without removing it from the line—a point of great importance to foresighted gas companies who believe in the economy of permanence.

The new EMCO bulletin tells you the detailed facts. Send for a copy.

PITTSBURGH EQUITABLE METER COMPANY

Pittsburgh Penna.

CONTROL OF TEMPERATURES



In the Efficient Gas Plant, the controlling and recording of critical temperatures has proved an economy. Records of temperatures and pressures are records of plant operation. And such records of operation are guides to efficiency.

The gas from the condenser should be at the correct temperature entering the scrubbers. At this large New York Gas Plant the proper temperature is maintained automatically by an American Temperature Controller, which regulates the amount of water fed to the condenser. American Recording Thermometer produces a written record of the temperature, thus serving as a check on the controller.

Write for the following Catalogs:

Gas Maker's Gauge Catalog P-7
Recording Gauge Catalog E-7
Thermometer Catalog F-7
Recording Thermometer Catalog H-7
Tachometer Catalog J-7
Temperature Controller Catalog R-7

AMERICAN INSTRUMENTS

AMERICAN SCHAEFFER & BUDENBERG CORP.

338 BERRY ST. BROOKLYN, N. Y.

Branches in Principal Cities

Makers of American Industrial Instruments Since 1851

Tycos Temperature Instruments

INDICATING - RECORDING - CONTROLLING

FOR YOUR GAS PLANT

Ammonia Still Thermometers
Engraved Stem Thermometers
Flue-Gas Thermometers
Gas Ranges
Gas-Main Thermometers, Straight and Angle Stem
Index Thermometers
Meter-Prover Thermometers
Precision, Engraved Thermometers
Pyrometers
Recording Thermometers
Still-Thermometers
Superheated Steam Thermometers
Temperature and Pressure Regulators
Water Circulation Thermometers
Anemometers
Aneroid Barometers
Base Metal, Rare Metal and Radiation Pyrometers
Electric Contact Thermometers
Fery Radiation Pyrometers
Hand Levels
Hydrometers
Hygrometers
Inclinometers
Mercurial Barometers
Mercurial, Recording and Index Thermometers for all Industrial and Laboratory Applications
Mercury Column Vacuum Pressure and Gauges
Mineral Oil Testing Instruments
Rain Gauges
Recording Barometers
Temperature, Pressure and Time Regulators
Thermographs
Thermometers of all kinds
Surveying Compasses

WRITE FOR GAS PLANT CATALOG

Taylor Instrument Companies

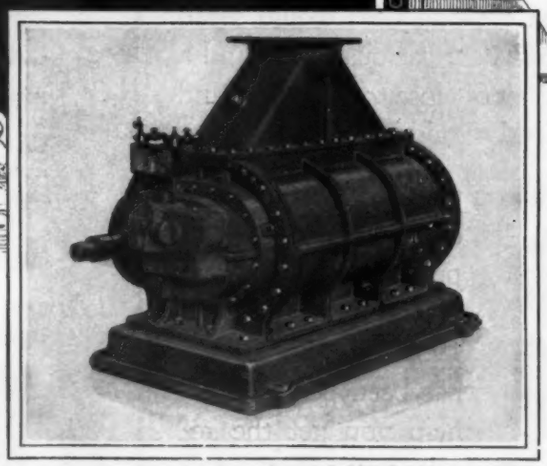
ROCHESTER, N. Y., U. S. A.

Manufacturing Distributors in Great Britain
Short & Mason, Ltd., London.

Canadian Plant
Tycos Building, Toronto

There is a Tycos or Taylor Temperature Instrument for Every Purpose

ROOTS
ROTARY
POSITIVE
METERS



The P. H. & F. M. ROOTS CO.

CHICAGO
People's Gas Building

CONNERSVILLE, INDIANA

NEW YORK
120 Liberty Street

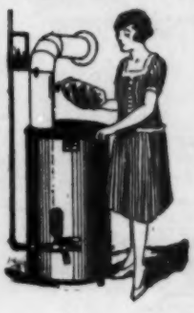
Originators of the Double Impeller Rotary Principle

9,000,000 Cubic Feet

More Gas Used Between Peak Loads

This most desirable annual load was put on their system by one gas company without one nickel's outlay for capital investment. To get this business in the cooking field would mean securing 360 new gas customers and a capital outlay of close to $50,000—and this new load would be ON-peak.

Why don't you plan to get your share of this additional off-peak gas load from Home Incinerators in 1928? A simple plan has been perfected to help you get the results you want. Ask us about it.



HOME INCINERATOR CO.

MILWAUKEE, WIS.

Who Said Coke Was Hard to Dig and Screen?

THE fellow who says coke is hard to handle with a bucket loader forgets to reckon with the HAISS LOADER equipped with a MITCHELL VIBRATING SCREEN.

Here's a machine whose Self-Feeding Propellers and tooth-edged buckets are powerful enough to successfully demolish any coke pile. And while it's loading at one end its Vibrating Screen Discharge Chute is delivering CLEAN coke into the waiting truck. That's all there is to it!

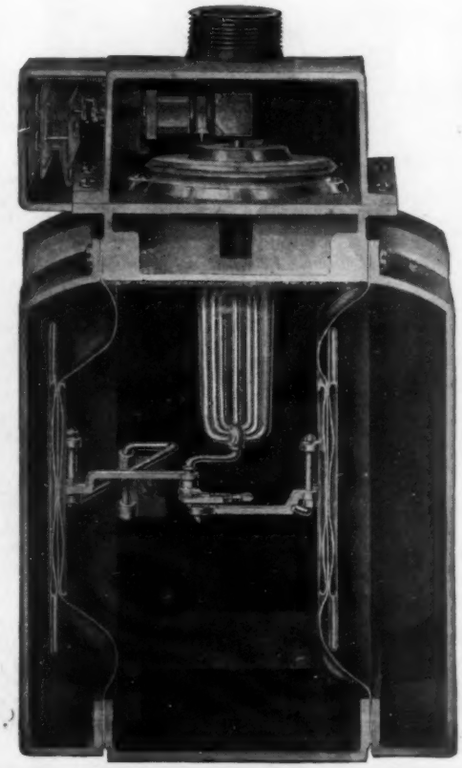
And remember this—A HAISS LOADER with a SCREENING CHUTE is a HIGH CAPACITY MACHINE that cuts loading time-and-costs to the bone! No Shovel Labor.

Ask for Catalog 527 and mention your interest in SCREENING.

GEORGE HAISS MANUFACTURING CO., INC.,
Park Ave. & 141st St., New York, N. Y.

HAISS

TRUCK LOADERS BELT CONVEYORS
CLAM SHELL BUCKETS
ELEVATORS-SCREENS-HOPPER GATES ETC.



Sprague Standard Meters

for
accurate
pilot light
measurement

Sprague Standard Meters represent over twenty years of progress

---

Write for Bulletin No. 10

Sprague Meter Company

Bridgeport **Conn.**

Bristol's Recording Instruments Guide Operations in Los Angeles Gas Works

THIS instrument board, at the Gas Works of the Los Angeles Gas and Electric Corporation, is exclusively "Bristol," consisting of 13 Bristol Recording Instruments. They are the sole means upon which this company depends to accurately record the gas pressures on their low and high pressure lines. All these instruments are not new—some have been in service for five years or more, the others being added as the company's operations expanded.

With this equipment, the man in charge of operation is able to control conditions to a high degree of efficiency, and at all times is reminded of the fact that these records are open for inspection by his superiors.

If you are interested in a more effective control of temperatures and pressures, consult our engineering staff. They are at your service without any obligation to you.

BRANCH OFFICES
BOSTON, MASS.
NEW YORK, N. Y.
PHILADELPHIA, PA.
PITTSBURGH, PA.
BIRMINGHAM, ALA.

The Bristol Company Waterbury, Connecticut

FOR 38 YEARS MAKERS OF BRISTOL'S RECORDING INSTRUMENTS

BRANCH OFFICES
DETROIT, MICH.
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ST. LOUIS, MO.
DENVER, COLO.
SAN FRANCISCO, CAL.

KERNIT INCINERATOR COMPANY

North 18th Centerway & Springdale Ave.,

AMPERE, NEW JERSEY

THE GAS-FIRED INCINERATOR FOR DOMESTIC USE

MADE IN THREE AND FOUR BUSHEL SIZES. EQUIPPED WITH TIME-O-STAT AND PILOT LIGHTER. FINISHED IN GRAY ENAMEL ON TOP, FRONT AND SIDES. BUILT TO WITHSTAND YEARS OF USAGE, WITH A MINIMUM OF SERVICING

Will dispose of garbage, table waste and combustible rubbish completely and economically, without odor or smoke.

A new modern gas usage which the public will appreciate and adopt,—providing a desirable addition to the domestic load and an attractive merchandising profit on the sale of the appliance.

The *Kermit* is a safeguard to public health.

—IMMEDIATE DELIVERIES—

Prices and Discounts on Request

IF IT'S DONE WITH HEAT YOU CAN DO IT BETTER WITH GAS

HE ADMITS

McWANE PIPE PERFORMS 100%

"McWane Pipe we have used has "performed 100 %".

"The ------ Company had the contract to build our plant and we had them lay the McWane Pipe on a cost plus basis."

"For some reason or other, possibly because Mr. ------ of that Company is a stockholder in the ------ Cast Iron Pipe Company, their superintendent maintained a very critical and skeptical attitude toward McWane Pipe. But in spite of that his work went fast and stood the test and all the work was done by common labor and not a leak showed up, and after the test was over he was forced to admit that it was easy to lay and made no trouble."

THE writer of the letter opposite is talking about some McWane Precalked Joint Cast Iron Pipe that has just been laid by a stockholder of a competing Pipe Company. This competitor was fair —but very critical!

McWane Pipe does not need to fall into the hands of its friends to succeed!

McWane Precalked Joints are a privilege—not a necessity. For the man "who pours his own," we make the same sturdy bell-and-spigot pipe minus the joint materials (open bell). Either way, you get the same McWane pipe—brute strength without brute weight, standard lengths and a lower joint cost.

WRITE FOR ILLUSTRATED LITERATURE

McWANE CAST IRON PIPE CO. BIRMINGHAM, ALA.

PACIFIC STATES CAST IRON PIPE CO. PROVO, UTAH.

SALES OFFICES IN PRINCIPAL CITIES

McWANE CAST IRON PIPE

Patented
Beware of Unsafe Infringing Imitations

AKME CONSUMING FLUE

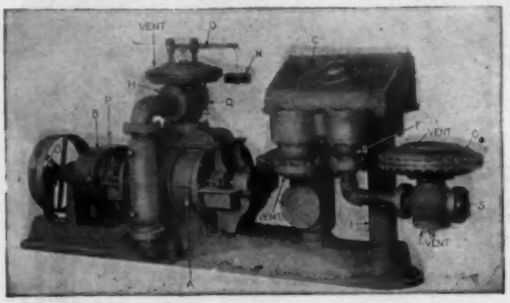
Highly recommended by Gas—Chemical—and Combustion Engineers for Gas Ranges, because it is the only safe and efficient flue to use.
Range Experts consider it a necessity for the more economical—safer—and better operation of gas ranges.
Keeps the Kitchen free of grease and the dirt it collects—Assures the proper oven draft being constant.
Prevents serious hazards caused by connecting Ranges to the outside or oven vents being open.

FLues in: Silver Finish, Black Japan, Whitegray Enamel

WORTH MANY TIMES THEIR COST

AKME FLUE, INC.
1517-27 Guilford Ave.,
Baltimore, Md.

THE IMPROVED KEMP SYSTEM



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For many years we have specialized in methods for greater efficiency in the utilization of gas for industrial heating operations.
Through energetic research we have found opportunities for the use of gas, undiscovered by the average gas man. To meet the requirements of our findings, we have developed the improved Kemp Automatic Gas System, whereby improvements and economies can be realized that will be productive of a larger use of gas and prove satisfactory to both user and gas company alike.

Send for new descriptive catalog, or, better still, request one of our engineers to call—it will not obligate you.

THE C. M. KEMP MFG. CO.
405-415 East Oliver Street Baltimore, Md.

ISBELL-PORTER COMPANY

Engineers and Contractors for Complete Gas Works

I-P Co.

Manufacturers of All Kinds of Gas Apparatus

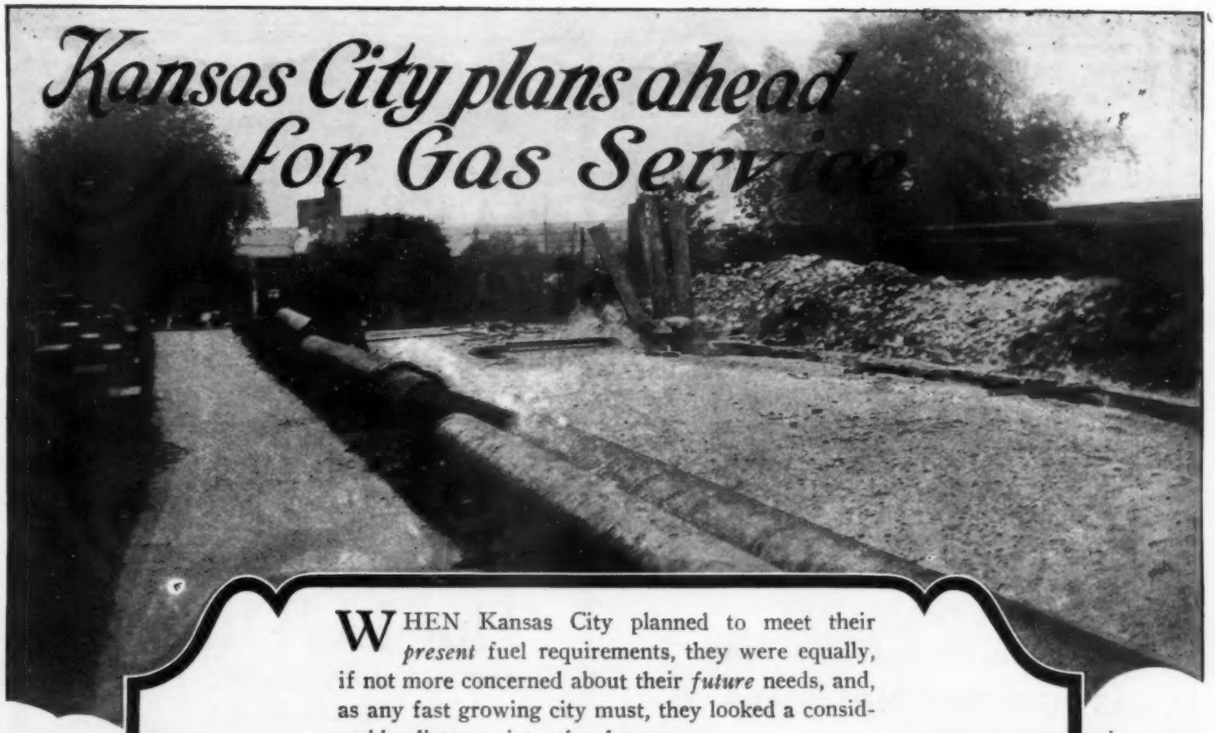
NEWARK - NEW JERSEY

Specialists in Fire Clay Refractories
With Over 30 Years Experience

Fire Brick for oil fuel furnaces, boilers and metallurgical furnaces.
Tiles and blocks of special shape for all purposes.
Muffles and planches, Coal gas benches.
Brass furnace linings, Water gas linings, Cupola linings.
Clay and Silica Retorts and settings.
Ground fire clay, Ground fire brick, Plastic fire brick, Refractory Cements.

THE JERSEY CITY REFRACTORIES CO.

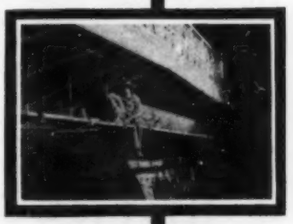
135 WEST SIDE AVENUE *A. E. ACHESON* JERSEY CITY, N. J.



WHEN Kansas City planned to meet their *present* fuel requirements, they were equally, if not more concerned about their *future* needs, and, as any fast growing city must, they looked a considerable distance into the future.

Naturally, their considerations included the important matter of the size and character of pipe to be used. Various other factors in pipe service were of course taken into account, but the one thing that stood out above all others was the probable life of the pipe line. An investment running into hundreds of thousands of dollars must be backed by sound reasoning, proven facts and practical experience. Only after carefully weighing all available evidence, could any product be singly favored. The pages of gas line history left no room for doubt regarding the performance of at least one product.

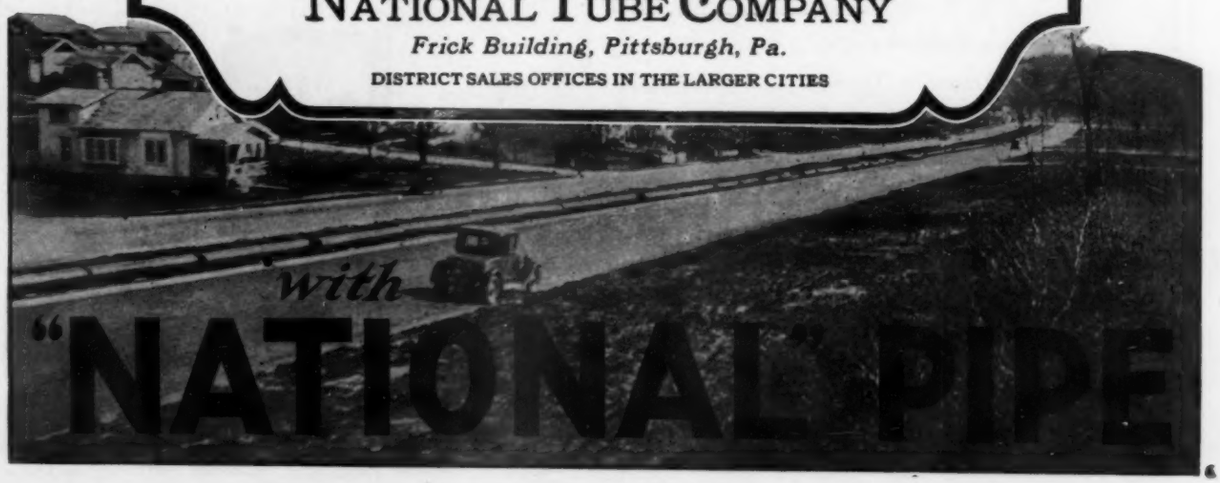
The line was constructed of 24-inch "NATIONAL" Pipe—The Recognized Standard for Gas Line Purposes.



NATIONAL TUBE COMPANY

Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES IN THE LARGER CITIES



Improved

IRON BORING OXIDE

Gas Purification at Lowest Cost

Our Improved Iron Boring Oxide will *remove* the largest amount of H_2S *at lowest cost.* It has earned an enviable reputation for its *low resistance to flow of gas,* and uniform purifying value at different stages of its active life as well.

The outstanding features of Improved Iron Boring Oxide are

ACTIVITY—ENDURANCE
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Let Us Help Solve Your Purifying Problems

GAS PURIFYING MATERIALS CO.

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Send for Circular 5

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LEADING GAS COMPANIES USE LAMBERT METERS

All sizes up to 3,400 cu. ft. capacity

Meters
Diaphragms
Repairs
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Pumps
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LAMBERT METER CO.

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Shipped Immediately From Stock

MONO-CAST and other standard pipe and fittings manufactured by this company—the largest independent pipe shop in the entire country—are stocked in leading cities for the customer's convenience. These stocks are large enough in tonnage and variety of standard sizes to allow us to meet rush orders at once in any section.

Stocks Carried in Eight Cities

Stocks of Standard Pipe and Fittings Maintained in these Cities

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SAN FRANCISCO, CAL.
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DALLAS, TEXAS
CHICAGO, ILL.
SEATTLE, WASH.
BIRMINGHAM, ALA.
Export Office—New York City

Stock yards in eight leading cities are at your service. These branch offices can meet your immediate requirements for standard sizes with stocks on hand. If your order is too large to be completely filled from branch stocks, the balance of your order will be rushed at once from our main foundry in Birmingham, Ala., which maintains at all times close contact with branch offices.

Order From The City Nearest You

American Cast Iron Pipe Company

BIRMINGHAM, ALABAMA

"In the Heart of Cleveland"

AUDITORIUM HOTEL

EAST 6TH AND ST. CLAIR AVE.

TO THE PUBLIC:

Are you wondering why we have built "Another" Hotel in Cleveland. One must have a good reason for spending nearly two million dollars. We have a reason worth far more than that.

Every hotel operator gives "His best efforts for your comfort." We have centered our efforts around one ideal desire, "To make you happy."

There must be something back of that desire. You can easily prove it by coming here just once.

Sincerely yours,
James L. Smith
Manager

Our Service Makes You Happy

Byllesby Engineering and Management Corporation

BYLLESBY ENGINEERING FINANCE MANAGEMENT PIONEERS IN PUBLIC SERVICE

CHICAGO NEW YORK

Pittsburgh San Francisco

CLARK INDUSTRIAL BURNER TIPS

These tips lend themselves to a wide variety of industrial burner applications.

For low pressure fan blast systems these tips outlast the life of metal tips, many times.

Manufactured in 15, 30 and 45 cubic foot capacities to fit respectively ¾", 1" and 1¼" standard reducing couplings.

American Lava Corporation
29-59 William St. Chattanooga, Tenn.
Manufacturers of Lava Tips and heat-resistant Insulators

PRIMITIVE METHODS *not profitable*

BURNING crude fuels in a raw state is a primitive method of obtaining heat. It is wasteful, troublesome and dirty. Civilization cannot tolerate it much longer.

Gas gives you concentrated heat, delivered at the burner, in any quantity, at any time. Gas is the only thing that burns.

Use of gas for heat, wherever heat is needed, means: doing away with the dirt and nuisance of ashes; relieving traffic of the heavy haulage of crude fuels; the abandonment of unsightly chimney stacks, spreading noxious fumes and soot over the neighborhood. It also means improved products.

As industry advances in economic efficiency, the use of gas in its heat-treating operations grows. Ask your gas company, now, what gas is doing for other companies in your line of business.

American Gas Association
420 Lexington Avenue, New York City

YOU CAN DO IT BETTER WITH GAS

The Industrial Section of the A. G. A. is broadcasting the above advertisement in a number of engineering and industrial papers for the benefit of the gas industry at large

WESTMORELAND "CRITERION" GAS COAL

The Standard for Gas Making Since 1854

Since this Company commenced operations, its well-known Westmoreland "Criterion" Gas Coal has been largely used by the Gas Companies of Northeastern United States and Canada, and its character is established as having no superior in gas giving qualities and freedom from sulphur and other impurities.

Mines situated on the Pennsylvania Railroad,
in Westmoreland County, Pa.

THE WESTMORELAND COAL COMPANY

Principal Office, Lewis Building, 15th and Locust Sts., Philadelphia, Pa.

Shipping Ports: Philadelphia, Baltimore, South Amboy, N. J., Lake Ports.

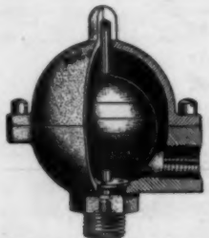
He remembered that he forgot

Herman P. Cinderpath having left the theatre hurriedly, is lighting out for home with all the speed that made him a college track star. Herman happened to remember—at the most crucial part of the play—that his gas heater had been left turned on. In the interests of having a place to sleep, he is choosing to let Mrs. Herman tell him all about the "best part that you missed" later in the evening.

The point of this harrowing story is that if Herman had equipped his hot water supply with a Red Top Relief Valve he would have seen the whole show. For the Red Top Model No. 1 protects against explosions automatically relieving pressures before they reach the danger point.

Red Top operation is as simple as Red Top construction. The valve bears the official approval of the Underwriters' Laboratories, Inc., America's foremost testing organization.

May we send you descriptive folders?



Sectional view, Model No. 1 for domestic hot water supply systems.

Neptune Meter Company
50 E. 42nd St. New York City
Branch Offices in Principal Cities

Red Top Relief Valves

STREET DEPARTMENT SUPPLIES

DEPENDABLE GAS MAIN BAGS
Type A—Seamless
Type B—Reinforced Seams
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GOODMAN CYLINDRICAL STOPPER
Inflatable for higher pressures

SOAP TAPE
BRUSHES
PLUGS
JOINT RUNNERS
AIRLINE MASKS

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523 Atlantic Ave., Brooklyn, N. Y.

LAVINO OXIDE

FOR GAS PURIFICATION

E. J. LAVINO AND COMPANY. BULLITT BLDG. PHILADELPHIA, PA.

COOPER OVEN THERMOMETER

FEATURES OF NEW STYLES A and B

STYLE B

(*Actual Size*)

Interchangeable with heat control.

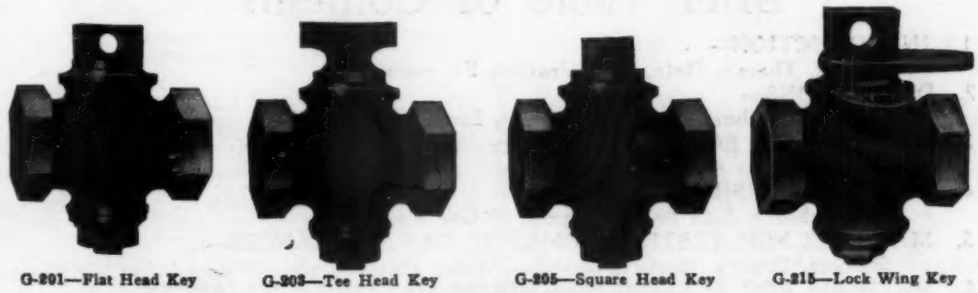
Nickel or Porcelain Enamel Cover

- Shows actual Fahrenheit degrees.
- Quick-acting thermostatic metal registers correct temperature immediately.
- Extreme heat cannot injure or make the thermometer inaccurate.
- Style B interchangeable with heat controls.
- Carefully calibrated.
- Porcelain enamel dials in two colors.
- Accuracy guaranteed for the life of the oven.
- No glass or mica to get broken.
- Economical in price.
- Handsome in appearance, adds greatly to the looks of any oven.

The Cooper Oven Thermometer Co.

4 MAIN STREET (Established 1885) PEQUABUCK, CONN.

Standard Flatway Meter Cocks



G-201—Flat Head Key G-203—Tee Head Key G-205—Square Head Key G-215—Lock Wing Key

Extra Heavy Gas Cocks

G-401—Flat Head Key G-415—Lock Wing Key G-417—Flat Head Key High Pressure Cock G-515—Iron Body Gas Cock Long Wing, with Brass Key

KITSON COMPANY Westmoreland and Stokley Streets **PHILADELPHIA, PA.**

Why Is a Gas Appliance?

Probably nowhere else in the world is the use of gas for fuel purposes so general as in Southern California. There are scores of gas appliances manufactured in Los Angeles and sold in the local market.

The Pacific Coast Gas Association wanted to be able to

Pick the Good from the Bad

and found, in its study of the question, that no judgment could be made until a standard laboratory procedure had been developed. This study has resulted in the

Gas Appliance Testing Code

The only manual of laboratory practice in gas appliance testing now in print.

AUTHORITY

Prepared and edited by the Technical Section of the Pacific Coast Gas Association under the supervision of E. L. Hall of the Portland (Oregon) Gas & Coke Company, Chairman of the Section. The special committee which compiled this volume was headed by R. M. Conner, now Director of the Gas Appliance Testing Laboratory of the American Gas Association. Mr. Conner was assisted by Walter M. Berry, formerly Gas Engineer of the Bureau of Standards and now Executive Engineer of the California Gas Research Council, and Prof. S. H. Graf of the Oregon State Agricultural College.

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9. **METHODS FOR TESTING MISCE LLANEOUS GAS APPLIANCES—**
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APPENDIX—Tables of Orifice Capacity, Gas Flow and Gas Constants.

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Lix Material

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Shipping points convenient to all parts of the country

For long time contact, low temperature or any severe purifying service.

Lix-Sponge
THE PERFECT READY MIXED OXIDE

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REGULATORS & GOVERNORS

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High Pressure Service	District Station
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Relief Valves Back Pressure Valves
Automatic Quick Closing Anti-Vacuum Valves

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Anderson, Indiana

FIRE-CLAY SHAPES
Made to SPECIAL DESIGN

A variety of clay mixtures are used in the Special Shapes and Tile Department. The WALSH plant has a daily producing capacity of more than 155 tons of special shapes and tile, and is, therefore, prepared to serve the needs of the gas industry effectively.

Let us figure on your "Specials"

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NEW YORK ST. LOUIS CHICAGO

The SHELBURNE
"DIRECTLY FACING THE SEA"
ATLANTIC CITY
"European Plan"
Famous French Grill and Restaurant
"A rendezvous for those who seek the best"
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SHELBURNE CONCERT ORCHESTRA
Proprietary-Management,
JACOB WEIKEL

Stawite FLOOR SAVERS
UNDER THE FEET OF GAS STOVES, GAS WATER HEATERS and GAS REFRIGERATORS

They protect floor coverings and hardwood floors against the damage caused by the weight concentrated on small iron feet. Made of White Porcelain. —low in price and attractive in appearance.

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TRENTON, NEW JERSEY
SEND FOR SAMPLES

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Low Pressures $3.50 each

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Coal Carbonization Plants, Benches, Repairs, Improvements, Extensions, Apparatus

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NOTICE

Sealed proposals will be received by the City Clerk of the City of Ypsilanti, Michigan, up to 7:30 o'clock P. M., Eastern Standard time, on Monday, February 6, 1928, for the purchase of the Ypsilanti Gas Plant & Distribution System, namely:

Coal Gas Plant with water gas auxiliary.

Capacity 500,000 cu. ft. per day.

2,500 customers.

Gas sale about 90,000,000 cu. ft. per year.

Said bids to be accompanied with proposed franchise.

A certified check in the amount of $25,000.00 to be required with each proposal when submitted. Said bids to be opened at Council meeting on above date.

The right to reject any or all proposals and the right to waive defects will be reserved by the City of Ypsilanti.

(Signed)
H. C. HOLMES,
City Clerk.

POSITION OPEN

POSITION OPEN—Wanted. First Class Meter Repairer. Good Salary. Apply William Buchan, care of Galveston Gas Company, 2422 Avenue D, Galveston, Texas.

DIVIDENDS

The Board of Directors of American Light & Traction Company, at a meeting held January 4, 1928, declared a CASH DIVIDEND of one and one-half per cent (1½%) on the Preferred Stock, a CASH DIVIDEND of two per cent (2%) on the Common Stock, both payable February 1, 1928, to stockholders of record at the close of business January 16, 1928.

The Transfer Books will close at 3 o'clock P. M., January 16, 1928, and will reopen at 10 o'clock A. M., January 27, 1928.

JAMES LAWRENCE, Secretary.

POSITION WANTED

POSITION WANTED as Gas Maker or Foreman of Water Gas Plant. Can get No. 1 results on soft coal operation. Twenty-five years experience. Can positively make good. Address Box No. 921, care of American Gas Journal, 53 Park Place, N. Y. C.

WANTED—Position as Superintendent of Plant and Distribution. Twenty-five years experience. Am a hustler and can get results. Experienced in laying welded pipe. Available at once. Address Box No. 922, care of American Gas Journal, 53 Park Place, N. Y. C.

POSITION WANTED—A first-class all-around gas man on distribution, experienced in laying mains and services on both high and low pressure, familiar with most all kinds and types of governors, experienced pipe welder, considered a first-class fitter on water heaters, ranges, etc.; good hand for some small company to get, either foreman or fitter, who isn't afraid to work. Address Box No. 923, care American Gas Journal, 53 Park Place, New York City.

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CONSULTING ENGINEER
POWERS THEATRE BUILDING
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GAS ENGINEERING CO.
Manufacturers of Gas Production Equipment
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Cox's High Pressure Computer, Price $5.00
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Locks Either Upright or for Draining
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Prevents Personal Damage - Hence Lawsuits
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IRON Connelly Iron Sponge and Governor Co. SPONGE
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USE THE BENEFIT OF 50 YEARS EXPERIENCE!

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BLOWERS & BOOSTERS
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Combustion Engineering Corp.
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Quigley Furnace Spec. Co., Inc.

CEMENTS, FIREBRICK
Quigley Furnace Spec. Co., Inc.
Walsh Fire-Clay Products Co.

CEMENTS, HIGH TEMPERATURE
Quigley Furnace Spec. Co., Inc.

CEMENTS
Refractory
E. J. Lavino & Co.

CHARGING MACHINERY
Bartlett-Hayward Co.
The Gas Machinery Co.
Isbell-Porter Co.
Russell Engineering Co.
Semet Solvay Engineering Corp.
Western Gas Const. Co.

CHUTES
C. W. Hunt Co., Inc.

CLAMPS (PIPE)
S. R. Dresser Manufacturing Co.

COALS
Boone County Coal Corp.
Westmoreland Coal Co.

COAL GAS APPARATUS
Bartlett-Hayward Co.
Carl Still, Incorporated.
The Gas Machinery Co.
Isbell-Porter Co.
The Koppers Construction Co.
Russell Engineering Co.
Semet Solvay Engineering Corp.
The Stacey Mfg. Co.
The U. G. I. Contracting Co.
Western Gas Construction Co.

COAL & COKE BINS CASTINGS
Semet-Solvay Engineering Corp.
Western Gas Construction Co.

COAL AND COKE HANDLING MACHINERY
Bartlett-Hayward Co.
Geo. Haiss Mfg. Co.
C. W. Hunt Co., Inc.
Dry Quenching Equipment Corp.
Isbell-Porter Co.
The Koppers Construction Co.
Riter-Conley Co.
Russell Engineering Co.
Semet Solvay Engineering Corp.
The U. G. I. Contracting Co.
Western Gas Construction Co.

COAL TAR PRODUCTS
Western Gas Construction Co.

COAL TUBS
C. W. Hunt Co., Inc.

COCKS
Meter
Kitson Company
Service
Kitson Co.

COKE CRUSHERS
Semet Solvay Engineering Corp.

COMPUTERS
Heating Value
The U. G. I. Contracting Co.

CONDENSERS
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engineering Co.
The Gas Machinery Co.
Isbell-Porter Co.
Riter-Conley Co.
Semet Solvay Enginering Corp.
The Stacey Bros. Gas Constr. Co.
The Stacey Mfg. Co.
Western Gas Construction Co.
West Gas Improvement Co.
High Duty
The U. G. I. Contracting Co.

CONTRACTORS' TUBS
C. W. Hunt Co., Inc.

CONTROLS
Am. Schaeffer & Budenberg Corp.
Bartlett-Hayward Co.
The Gas Machinery Co.
Robertshaw Thermostat Co.
Semet Solvay Engineering Corp.
Smoot Engineering Corp.
The U. G. I. Contracting Co.
Western Gas Construction Co.

CONVEYORS
Geo. Haiss Mfg. Co.
C. W. Hunt Co., Inc.
Isbell-Porter Co.
The Koppers Construction Co.
Semet Solvay Engineering Corp.

CONCENTRATORS AMMONIA
Bartlett-Hayward Co.
The Gas Machinery Co.
Isbell-Porter Co.
Semet Solvay Engineering Corp.

COOLERS
Semet-Solvay Engineering Corp.
Western Gas Construction Co.

COUPLINGS
Bartlett-Hayward Co.
S. R. Dresser Manufacturing Co.
National Tube Co.
P. H. & F. M. Roots Co.

CRUSHERS
C. W. Hunt Co., Inc.

DERRICK—PIPE
Safety Gas Main Stopper Co.

DISCHARGING MACHINERY
Bartlett-Hayward Co.
Russell Engineering Co.

DOMESTIC INCINERATORS
Home Incinerator Co.
Kernit Incinerator Co.

DRAFT GAUGES
Am. Schaeffer & Budenberg Corp.
Precision Ther. & Inst. Co.

DRILLING MACHINES
Mueller Co.

ELECTRIC LOCOMOTIVES
C. W. Hunt Co., Inc.

ELEVATORS
Craig Ridgway & Son Co.

ENGINE INDICATORS
Am. Schaeffer & Budenberg Corp.

ENGINEERS
Combustion
Bartlett-Hayward Co.
The Improved Equipment Co.
The Koppers Construction Co.
Russell Engineering Co.
Smoot Engineering Corp.
Consulting
Bartlett-Hayward Co.
The Koppers Construction Co.
Russell Engineering Co.
Semet Solvay Engineering Corp.
The U. G. I. Contracting Co.
George H. Waring
Contracting
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engineering Co.
Isbell-Porter Co.
The Improved Equipment Co.
The Koppers Construction Co.
Russell Engineering Co.
Semet Solvay Engineering Corp
The Stacey Bros. Gas Constr. Co.
The Stacey Mfg. Co.
The U. G. I. Contracting Co.
West Gas Improvement Co.
Designing
Western Gas Construction Co.

EXHAUSTERS
The Connersville Blower Co.
The Gas Machinery Co.
Isbell-Porter Co.
P. H. & F. M. Roots Co.
The Stacey Mfg. Co.
The U. G. I. Contracting Co.

FIREBRICK—CHECKER BRICK
The Jersey City Refractories Co., Inc.
Russell Engineering Co.
Semet Solvay Engineering Co.
The U. G. I. Contracting Co.
Walsh Fire-Clay Products Co.
Western Gas Construction Co.

FIREBRICK, CEMENT
Quigley Furnace Spec. Co., Inc.
Walsh Fire-Clay Products Co.

FITTINGS
Isbell-Porter Co.
The Gas Machinery Co.
Mueller Co.
Semet Solvay Engineering Corp.
The Stacey Mfg. Co.
U. S. Cast Iron Pipe & Fdy. Co.
Western Gas Construction Co.

FITTINGS, FLANGED
U. S. Cast Iron Pipe & Fdy. Co.

FITTINGS
Pipe
American Cast Iron Pipe Co.
Semet-Solvay Engineering Corp.

FIXTURES
General Gas Light Co.
Welsbach Co.

FLOORS, IRON, BRICK AND STEEL
Western Gas Construction Co

FLUE PIPE (Cast Iron Oval)
James B. Clow & Sons

FLUES (Consuming) for Gas Range
Akme Flue, Inc.

FURNACES (Case Hardening)
Gas Fired
Warm Air
Geo. D. Roper Co.

GAS ANALYSIS APPARATUS
American Meter Co.
S. R. Dresser Manufacturing Co.
Metric Metal Works
Precision Ther. & Inst. Co.
The U. G. I. Contracting Co.

GASKETS, ASBESTOS
Safety Gas Main Stopper Co.

GAS MASKS
Safety Gas Main Stopper Co.

GAS PLANTS, COMPLETE
Bartlett-Hayward Co.
Carl Still, Incorporated.
The Gas Machinery Co.
Gas Engineering Co.
The Improved Equipment Co.
Isbell-Porter Co.
Russell Engineering Co.
Semet Solvay Engineering Corp.
The Stacey Bros. Gas Const. Co.
The Stacey Mfg. Co.
The U. G. I. Contracting Co.
Western Gas Construction Co.
West Gas Improvement Co.

GAS TESTING APPARATUS
Alpha-Lux Company, Inc.
Lambert Meter Co.
Metric Metal Works
Pittsburgh Equitable Meter Co.
Precision Ther. & Inst. Co.

MARYLAND METER WORKS

OF

AMERICAN METER COMPANY

INCORPORATED

BALTIMORE MARYLAND

MARYLAND "C" TYPE METERS

Double the Hourly Capacity, with Slow Speed Operation

Increased Capacity.
Decreased Installation Cost.
Decreased Maintenance Cost.

Decreased cost for service connections per cubic foot capacity on completed installation.

Showing:
Enlarged valves with special guides; Compound levers for double diaphragms.

Showing:
Double diaphragms with equalizers.

The "C" METER is a NEW development in the larger sizes of THE MARYLAND "B" METER, with Tin Case and retaining the established principle for Positive Displacement Measurement in the two-diaphragm, slide-valve method of Operation.

THE MARYLAND "B" TYPE GAS METERS
THE MARYLAND "C" TYPE GAS METERS

Southern Representative
J. E. Montgomery, 1500 South Tenth Ave., Birmingham, Alabama

Buyers' Reference Index

See page 117 for advertisements of these products

Superior Meter Co.
The U. G. I. Contracting Co.

GAUGE BOARDS
Am. Schaeffer & Budenberg Corp.
Western Gas Construction Co.

GAUGES
Am. Schaeffer & Budenberg Corp.
American Meter Co.
The Bristol Co.
Connelly Iron Sponge & Gov. Co.
Helme & McIlhenny
Lambert Meter Co.
Maryland Meter Works
Metric Metal Works
Safety Gas Main Stopper Co.
Taylor Instrument Companies
Pressure-Recording
American Schaeffer & Budenberg Co
D. McDonald & Co.
Superior Meter Co.

GLOVES
Rubber
Leather
Safety Gas Main Stopper Co.

GOVERNORS
The Stacey Mfg. Co.
Automatic
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
Pittsburgh Equitable Meter Co.
Coke Oven
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
The Gas Machinery Co.
The Koppers Construction Co.
Pittsburgh Equitable Meter Co.
Semet Solvay Engineering Corp
Smoot Engineering Corp.
District
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov Co.
Groble Gas Regulator Co.
Helme & McIlhenny
Isbell-Porter Co.
Pittsburgh Equitable Meter Co.
Reynolds Gas Regulator Co.
Semet Solvay Engineering Corp.
Smoot Engineering Corp.
Exhauster
Chaplin-Fulton Mfg Co.
Connelly Iron Sponge & Gov. Co.
The Connersville Blower Co.
Isbell-Porter Co.
Pittsburgh Equitable Meter Co.
Smoot Engineering Corp.
High Pressure
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
Pittsburgh Equitable Meter Co.
Reynolds Gas Regulator Co.
P. H. & F. M. Roots Co.
Smoot Engineering Corp.
The Sprague Meter Co.
Laboratory
D. McDonald & Co.
Low Pressure
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
Pittsburgh Equitable Meter Co.
Reynolds Gas Regulator Co.
P. H. & F. M. Roots Co.
Semet Solvay Engineering Corp.
Smoot Engineering Corp.
The Sprague Meter Co.
Retort House
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
The Gas Machinery Co.
Isbell-Porter Co.
Pittsburgh Equitable Meter Co.
Russell Engineering Co.
Semet Solvay Engineering Corp.
Smoot Engineering Corp.
Service
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
Pittsburgh Equitable Meter Co.
Reynolds Gas Regulator Co.
Station
The Sprague Meter Co.
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
Helme & McIlhenny
Pittsburgh Equitable Meter Co.
Reynolds Gas Regulator Co.
Semet Solvay Engineering Corp.
Station Automatic
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
Pittsburgh Equitable Meter Co.

GRAVITOMETERS
Precision Thermometer & Instrument, Co.

HEATERS
Room
James B. Clow & Sons
General Gas Light Co.
Homestead Heater.
Welsbach Company

HEATERS (WATER)
Hot Water
Electric Porcelain & Mfg. Co.
Humphrey Co.
Kompak Company
Welsbach Co.
House
American Gas Products Corp.

HOISTS
C. W. Hunt Co., Inc.

HOLDERS
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engintering Co.
The Koppers Construction Co.
Riter-Conley Co.
The Stacey Bros. Gas Const. Co.
The Stacey Mfg. Co.
Western Gas Construction Co.

HOPPERS—COAL AND COKE
Bartlett-Hayward Co.
Cruse-Kemper Co.
Riter-Conley Co.
Russell Engineering Co.
Semet Solvay Engineering Corp.
The Stacey Mfg. Co.

HOTELS
Shelburne Hotel.

HYDROGEN GAS APPARATUS
Bartlett-Hayward Co.
Gas Engineering Co.
The Improved Equipment Co.
Semet Solvay Engineering Corp.
The Stacey Mfg. Co.

HYDROMETERS
Precision Ther. & Inst. Co.
Taylor Instrument Companies

INCINERATORS—GAS FIRED
Home Incinerator Co.
Kernit Incinerator Co.

INDUSTRIAL GAS MIXERS
Geo. D. Roper Corp.

INDUSTRIAL TRACK
C. W. Hunt Co., Inc.

INSTRUMENTS
Am. Schaeffer & Budenberg Corp.
The Bristol Co.
Metric Metal Works
Precision Ther. & Inst. Co.
P. H. & F. M. Roots Co.
The U. G. I. Contracting Co.
Recording
Am. Schaeffer & Budenberg Corp.
Alpha-Lux Company, Inc.
Superior Meter Co.

JOINTS
Semet-Solvay Engineering Corp.
U. S. Cast Iron Pipe & Foundry Co.
Insulating
Semet-Solvay Engineering Corp.
The U. G. I. Contracting Co.

JOINT RUNNERS
Safety Gas Main Stopper Co.

LAMPS
General Gas Light Co.
Kitson Co.
Welsbach Co.

LAMP POSTS
General Gas Light Co.
Kitson Co.
Welsbach Street Lighting Co. of America

LOADERS—BUCKET, PORTABLE
Geo. Haiss Mfg. Co.

MANILA & WIRE ROPE
C. W. Hunt Co., Inc.

MANTLES
General Gas Light Co.
Welsbach Co.

MASKS—GAS
Melters
Connelly Iron Sponge & Gov. Co.
The Safety Gas Main Stopper Co

MAST & GAFF OUTFITS
Geo. Haiss Mfg. Co.
C. W. Hunt Co., Inc.

MEASURING CHUTES
C. W. Hunt Co., Inc.

METERS
Air
American Meter Co.
The Connersville Blower Co.
John J. Griffin & Co.
Lambert Meter Co.
D. McDonald & Co.
Metric Metal Works
Neptune Meter Co.
Pittsburgh Equitable Meter Co.
P. H. & F. M. Roots Co.
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works
The U. G. I. Contracting Co.
Artificial
American Meter Co.
John J. Griffin & Co.
Helme & McIlhenny
Lambert Meter Co.
Maryland Meter Works
D. McDonald & Co.
Metric Metal Works
Neptune Meter Co.
Pittsburgh Equitable Meter Co.
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works
Demand
D. McDonald & Co.
Dry
American Meter Co.
Lambert Meter Co.
Maryland Meter Works
D. McDonald & Co.
Metric Metal Works
Pittsburgh Equitable Meter Co.
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works
Natural Gas
American Meter Co.
The Connersville Blower Co.
John J. Griffin & Co.
Helme & McIlhenny
Lambert Meter Co.
Maryland Meter Works
D. McDonald & Co.
Metric Metal Works
P. H. & F. M. Roots Co.
Pittsburgh Equitable Meter Co.
The Sprague Meter Co.
Superior Meter Co.
Oil
Western Gas Construction Co.
Prepayment
American Meter Co.
John J. Griffin & Co.
Lambert Meter Co.
Maryland Meter Works
D. McDonald & Co.
Metric Metal Works
Pittsburgh Equitable Meter Co.
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works
Station
American Meter Co.
The Connersville Blower Co.
The Gas Machinery Co.
John J. Griffin & Co.
Lambert Meter Co.
Maryland Meter Works
D. McDonald & Co.
Metric Metal Works
Pittsburgh Equitable Meter Co.
P. H. & F. M. Roots Co.
Superior Meter Co.
Nathaniel Tufts Meter Works
Steam
The U. G. I. Contracting Co.
Test
American Meter Co.
John J. Griffin & Co.
Lambert Meter Co.
Maryland Meter Works
D. McDonald & Co.
Metric Metal Works
Pittsburgh Equitable Meter Co.
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works

METER CONNECTIONS
American Meter Co.
Bartlett-Hayward Co.
S. R. Dresser Manufacturing Co.
D. McDonald & Co.
Maryland Meter Works
The Sprague Meter Co.
Superior Meter Co.
Nathaniel Tufts Meter Works

MIXERS, GAS
The C. M. Kemp Mfg. Co.
Geo. D. Roper Corp.
Smoot Engineering Corp.

MOTOR CARS
C. W. Hunt Co., Inc.

NAPHTHALENE EXTRACTORS
Semet-Solvay Engineering Corp.
Western Gas Consruction Co.

OVENS COKE AND GAS
Carl Still, Incorporated.
The Gas Machinery Co.
The Improved Equipment Co.
The Koppers Construction Co.
Russell Engineering Co.
Semet Solvay Engineering Corp.
The U. G. I. Contracting Co.

OXIDE
Alpha-Lux Company, Inc.
Connelly Iron Sponge & Gov. Co.
Gas Purifying Materials Co., Inc
E. J. Lavino & Co.

PACKING
Asbestos
Jute
The Safety Gas Main Stopper Co.

PAINTS
Jos. Dixon Crucible Co.
The U. G. I. Contracting Co.
Wailes Dove-Hermiston Corp.

PAINTS, ANTI ACID AND ALKALI
Quigley Furnace Spec. Co., Inc.

PAINTS
Graphite
Jos. Dixon Crucible Co.

PAINTS, RUSTPROOF
Quigley Furnace Spec. Co., Inc.

PHOTOMETERS (JET)
Connelly Iron Sponge & Gov. Co.

PHOTOMETERS
Lambert Meter Co.
The U. G. I. Contracting Co.
Warren Foundry & Pipe Co.

PIPE
Bartlett-Hayward Co.
National Tube Co.
Semet Solvay Engineering Corp.
The Stacey Mfg. Co.
U. S. Cast Iron Pipe & Fdy. Co.
Western Gas Construction Co.
Bell
Donaldson Iron Co.
Cast Iron
James B. Clow & Sons
Donaldson Iron Co.
McWane Cast Iron Pipe Co.
Flange
Donaldson Iron Co.
U. S. Cast Iron Pipe & Fdy. Co.
Spigot
Donaldson Iron Co.
Steel
Smith Corpn., A. O.
Welded Steel
The Stacey Mfg. Co.
Semet-Solvay Engineering Corp.

PIPE COATINGS
Wailes Dove-Hermiston Corp.

PRESSURE HOLDERS
The Stacey Bros. Gas Const. Co.

PLATES
Floor
Cruse-Kemper Co.
Gas Engineering Co.
Riter-Conley Co.
Russell Engineering Co.
The Stacey Mfg. Co.

PLUGS SERVICE AND MAIN
Rubber
Soft Wood
The C. M. Kemp Mfg. Co.
Soft Wood
The Safety Gas Main Stopper Co.

PRODUCER GAS PLANT
Gas Engineering Co.
The Gas Machinery Co.
The Koppers Construction Co.
Riter-Conley Co.
Semet Solvay Engineering Corp.
The Stacey Mfg. Co.
The U. G. I. Contracting Co.
Western Gas Construction Co.

PROVERS—METER
American Meter Co.
Helme & McIlhenny
Lambert Meter Co.
D. McDonald & Co.
Pittsburgh Equitable Meter Co.
Superior Meter Co.

5-A Meter

A-METERS

	Capacity at 0.5 in. differential
5-A	175 cubic feet per hour
10-A	375 cubic feet per hour
30-A	875 cubic feet per hour
60-A	1500 cubic feet per hour
150-A	3400 cubic feet per hour

B-METERS

	Capacity at 0.5 in. differential
5-B meter	150 cubic feet per hour
10-B meter	300 cubic feet per hour
20-B meter	450 cubic feet per hour
30-B meter	600 cubic feet per hour
60-B meter	1300 cubic feet per hour
100-B meter	1800 cubic feet per hour

5-B Meter

HELME & McILHENNY

OF

AMERICAN METER COMPANY
INCORPORATED

17th and Clearfield Streets
Philadelphia, Pa.

ESTABLISHED 1848

Buyers' Reference Index

See page 117 for advertisements of these products

PUMPS
Lambert Meter Co.
P. H. & F. M. Roots Co.
Superior Meter Co.
Drip
The Connersville Blower Co.
D. McDonald & Co.
George D. Roper Corp.
Gas Bag
The Safety Gas Main Stopper Co.
Hand
George D. Roper Corp.
Oil
The Connersville Blower Co.
D. McDonald & Co.
George D. Roper Corp.
Semet Solvay Engineering Corp.
Power
George D. Roper Corp.
Pressure
D. McDonald & Co.
Service
The Safety Gas Main Stopper Co.
Tar
The Connersville Blower Co.
D. McDonald & Co.
George D. Roper Corp.
P. H. & F. M. Roots Co.
Semet Solvay Engineering Corp
Vacuum
D. McDonald & Co.
P. H. & F. M. Roots Co.
Water
George D. Roper Corp.

PURIFIERS
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engineering Co.
The Gas Machinery Co.
Isbell-Porter Co.
The Koppers Construction Co.
Riter-Conley Co.
Semet Solvay Engineering Corp
The Stacey Bros. Gas Const. Co.
The Stacey Mfg. Co.
The U. G. I. Contracting Co.
Western Gas Construction Co.

PURIFYING MATERIALS
Alpha-Lux Company, Inc.
Connelly Iron Sponge & Gov. Co.
Cruse-Kemper Co.
Gas Purifying Materials Co., Inc
Lavino, E. J., & Co.

PURIFIER TRAYS
Bartlett-Hayward Co.
Cruse-Kemper Co.
The Gas Machinery Co.
Semet Solvay Engineering Corp.
The Stacey Bros. Gas Const. Co.
The Stacey Mfg. Co.
The U. G. I. Contracting Co.

PYROMETERS
Indicating
Recording
The Bristol Co.
Taylor Instrument Companies

RADIATORS
Gas Steam
Gas Water
James B. Clow & Sons

RANGES—GAS
American Stove Co.
Electric Porcelain & Mfg. Co.
Geo. D. Roper Corp.

REFRACTORY CEMENTS
Quigley Furnace Spec. Co., Inc.
Walsh Fire-Clay Products Co.

REFRACTORY GUN
Quigley Furnace Spec. Co., Inc.

REFRACTORY LININGS
Alpha-Lux Company, Inc.
The Gas Machinery Co.
The Jersey City Refractories Co. Inc.
E. J. Lavino & Co.
Russell Engineering Co.
Quigley Furnace Spec. Co., Inc.
Semet Solvay Engineering Corp.
The U. G. I. Contracting Co.
Walsh Fire-Clay Products Co.

REGULATORS
Am. Schaeffer & Budenberg Corp.
American Stove Co.
The Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
Isbell-Porter Co.
Groble Gas Regulator Co.
Minneapolis Heat Regulator Co.
Pittsburgh Equitable Meter Co.
Reynolds Gas Regulator Co.
Robertshaw Thermostat Co.
P. H. & F. M. Roots Co.
Semet Solvay Engineering Corp.
Smoot Engineering Corp.
The Sprague Meter Co.
Taylor Instrument Companies
The Wilcolator Co.

RETORT CEMENT
Alpha-Lux Company, Inc.
The Improved Equipment Co.
The Jersey City Refractories Co. Inc.
E. J. Lavino & Co.
Quigley Furnace Specialties Co., Inc.
Russell Engineering Co.
Walsh Fire-Clay Products Co.

RETORTS
The Jersey City Refractories Co., Inc.
E. J. Lavino & Co.
Riter-Conley Co.
Walsh Fire-Clay Products Co.
Horizontal and Inclined
Silica and Clay
The Gas Machinery Co.
The Improved Equipment Co.
Russell Engineering Co.
Walsh Fire-Clay Products Co.
Silica and Clay
The Gas Machinery Co.
The Improved Equipment Co.
The Jersey City Refractories Co. Inc.
Russell Engineering Co.
Walsh Fire-Clay Products Co.
Vertical
The U. G. I. Contracting Co.
West Gas Improvement Co.

SCALES
C. W. Hunt Co., Inc.

SCRUBBERS
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engineering Co.
The Gas Machinery Co.
Isbell-Porter Co.
The Koppers Construction Co.
Riter-Conley Co.
Semet Solvay Engineering Corp.
The Stacey Bros. Gas Constr. Co.
The Stacey Mfg. Co.
The U. G. I. Contracting Co.
Western Gas Construction Co.

SERVICE BOXES
Mueller Co.

SERVICE PLUG—RUBBER
The Safety Gas Main Stopper Co.

SKIP HOISTS
C. W. Hunt Co., Inc.

SPONGE
Alpha-Lux Company, Inc.
Connelly Iron Sponge & Gov. Co.
Gas Purifying Materials Co., Inc.
Lavino, E. J., & Co.

STATION METERS
American Meter Co.
The Connersville Blower Co.
The Gas Machinery Co.
Maryland Meter Works
D. McDonald & Co.
Metric Metal Works
Pittsburgh Equitable Meter Co.
P. H. & F. M. Roots Co.

STEAM ACCUMULATORS
The Gas Machinery Co.
Semet Solvay Engineering Corp.
Smoot Engineering Corp.
The U. G. I. Contracting Co.

STOPPERS
The Safety Gas Main Stopper Co.

STREET DEPT. EQUIPMENT
The Safety Gas Main Stopper Co.

STOVES—GAS
Electric Porcelain & Mfg. Co.
Geo. D. Roper Corp.

STREET LAMPS
General Gas Light Co.
Kitson Co.
Welsbach Street Lighting Co. of America

SYSTEMS
Combustion Control
The C. M. Kemp Mfg. Co.
Smoot Engineering Corp.

TACHOMETERS
Precision Ther. & Inst. Co.

TANKS
Bartlett-Hayward Co.
Cruse-Kemper Co.
Gas Engineering Co.
Riter-Conley Co.
Pittsburg Water Heater Co.
Semet Solvay Engineering Corp.
The Stacey Bros. Gas Constr. Co.
The Stacey Mfg. Co.
Western Gas Construction Co.
High Pressure
The Stacey Mfg. Co.

TANK REGULATORS
Am. Schaeffer & Budenberg Corp.

TAP, SOAP—BINDING
The Safety Gas Main Stopper Co.

TAPPING MACHINES
Mueller Co.

TAR DISPLACEMENT SYSTEM
Semet-Solvay Engineering Corp.
Western Gas Construction Co.

TAR DISTILLING PLANTS
Carl Still, Incorporated.
Gas Engineering Co.
The Gas Machinery Co.
Riter-Conley Co.
Semet-Solvay Engineering Corp.
The Stacey Bros. Gas Const. Co.

TAR EXTRACTORS
Bartlett-Hayward Co.
Gas Engineering Co.
The Gas Machinery Co.
Isbell-Porter Co.
The Koppers Construction Co.
Semet Solvay Engineering Corp.
The Stacey Mfg. Co.
The U. G. I. Contracting Co.
Western Gas Construction Co.

TEMPERATURE CONTROLLING DEVICE
Am. Schaeffer & Budenberg Corp.
American Stove Co.
The Bristol Co.
Robertshaw Thermostat Co.
The Wilcolator Co.

THERMOSTATS
The Bristol Co.
Robertshaw Thermostat Co.
The Wilcolator Co.

THERMOMETERS
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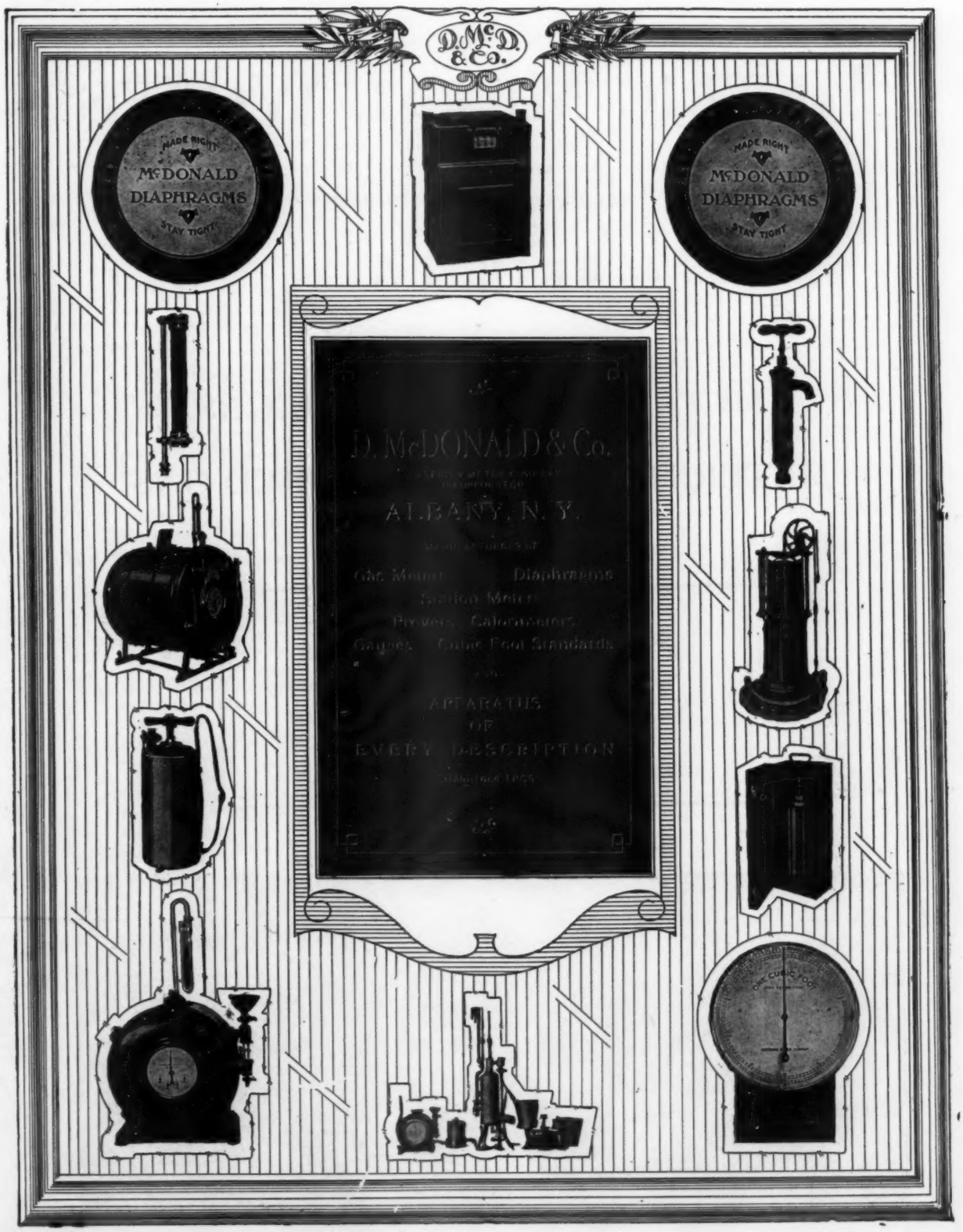
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The Use of Gas Has Increased 500% Since 1895

Notwithstanding the loss of a large percentage of gas lighting, the diversified use of gas for domestic and industrial purposes has very materially increased the sales per meter.

The peak demand load is constantly increasing and is of such a nature that volume, as well as pressure, is required for the best results.

From a study of the individual records of several hundred thousand meters, summarized according to the system of the

FOUR CARDINAL POINTS

it is very evident that meters with additional capacity for the volume required hold their proof far better and have a longer life than meters which are overloaded and overworked.

LOOKING AHEAD 30 YEARS

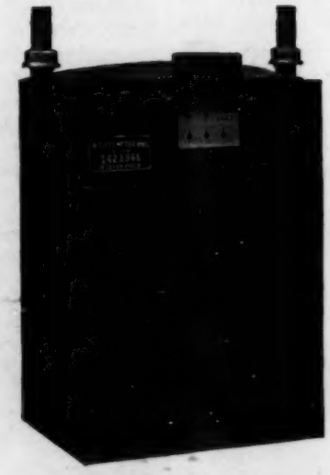
The Lifetime of Our Meters

We strongly urge the placing of meters of greater capacity and volume for domestic and industrial customers where surroundings and industry indicate a prospective increased use of gas.

Capacities at One-Half Inch Loss in Pressure

5-B Capacity	150 Cu. Ft. Per Hour	100-B Capacity	1,800 Cu. Ft. Per Hour
10-B Capacity	300 Cu. Ft. Per Hour	150-B Capacity	3,000 Cu. Ft. Per Hour
20-B Capacity	450 Cu. Ft. Per Hour	250-B Capacity	4,500 Cu. Ft. Per Hour
30-B Capacity	600 Cu. Ft. Per Hour	500-B Capacity	7,500 Cu. Ft. Per Hour
60-B Capacity	1,250 Cu. Ft. Per Hour		

19 Years Experience



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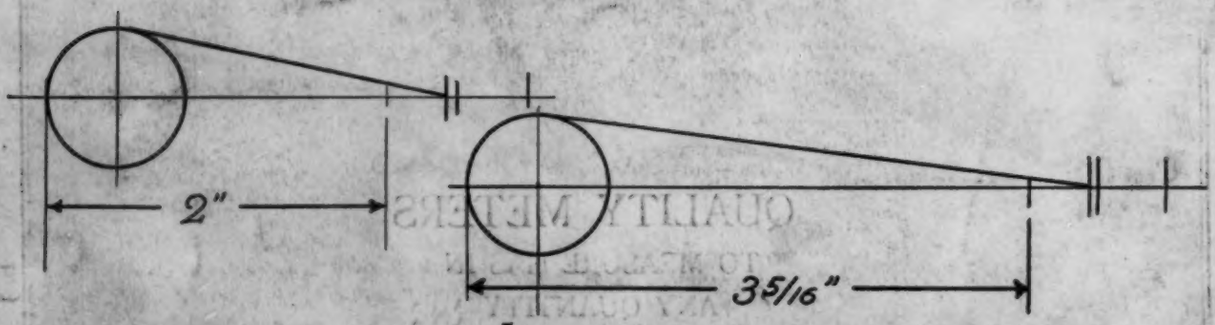

From 2 inches to $3\frac{5}{16}$ inches---a 60 per cent increase!

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5-A	175	cubic feet per hour
10-A	375	" " " "
30-A	875	" " " "
60-A	1500	" " " "
150-A	3400	" " " "

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